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## Friendly Persuasion

THE traditional symbol of the Trades Union Council has always been a brawny carthorse unfettered by saddle, bridle, and bit and minus a rider. The implication is that the T.U.C., as the representative of British trade unionism, is one with its members, the spearhead of their action, and the mouthpiece of their common view. Today, the Council's is not the only voice to be heard on union policy and intentions: these increasingly are expressed direct from factory or workshop floor and often precede unofficial action not only unapproved by the central body but directly opposed to its policies and directives. Last week, we commented on the difficulties caused to the Council by this disregard of its leadership—we referred to the defiance by some unions of the T.U.C.'s questionnaires on unofficial strike action. In a recent interview, Mr. George Woodcock, now Assistant General Secretary of the T.U.C. and the man who will succeed Sir Vincent Tewson next week as General Secretary of that Council, admitted that the T.U.C. must rely on "argument and persuasion" when managing its member unions. "Any attempt to assume dictatorial powers would be a great mistake

and in any case, it would not come off." The trend for union power to shift from the top to the workshop floor was the inevitable result of 20 years of good trade and full employment. The question of decentralising union authority so that the situation did not get out of hand was a job for individual unions. Mr. Woodcock could only call attention to what was happening: trade union leaders, like everyone else, must adapt themselves to circumstances. Mr. Woodcock is not alone on the T.U.C. in drawing attention to the undesirability of the unofficial strike—in the annual report of the Transport & General Workers' Union, of which Mr. Frank Cousins is General Secretary, the statement is made that strike action should be the last resort in the pursuit of legitimate claims. Meanwhile, two unofficial transport strikes are in progress: the 450 London Transport maintenance men who stopped work on July 29 at Lots Road, Neasden, and Greenwich power stations decided on August 26 to stay out, and 200 escalator and lift maintenance men on the London Underground also stopped work on that day. It looks as if Mr. Woodcock's powers of friendly persuasion are to be tested to the full in the near future, and it may be that both T.U.C. and general public will come to wonder whether this is an adequate substitute for harness and rider in an age when all animals are equal, but some are more equal than others.

## The Railway Labour Front

ON the railway labour front, and on the same day, two separate negotiations have come to a temporary halt. On August 30, union claims for a reduction in working hours were rejected by the British Transport Commission, and a meeting between representatives of the National Union of Railwaymen and the Confederation of Shipbuilding & Engineering Unions and Sir Brian Robertson, Chairman of the Commission, failed to find a way out of the present deadlock over railway shopmen's pay. It is unlikely that the unions expected their claim for a shorter working week to be met, for its full concession would cost the Commission some £30 million a year, a heavy addition to a wage bill already swollen by the recent pay settlement. The unions now are considering whether it would be worth while to take the claim further through the negotiating machinery. The discussion on railway shopmen's pay was adjourned without commitment on either side, and talks will be resumed today, September 2. The difficulty appears to be in relation to the amount which has been offered: although the unions rejected the Commission's offers of from 5s. to 6s. a week on the grounds that they wanted it back-dated to January 4 instead of July 4—the date proposed by the Commission—it is understood that they might consider a later date if the amount of the offer were increased. Sir Brian Robertson has said that he is unable to vary the offer; nevertheless, he seems to have given the unions the impression that he will have consulted the Government on the possibility of a further addition to railway labour costs before he meets them again today. The extra six months' back-dating sought by the unions would cost the Commission at least £750,000. About 110,000 workers are affected by the negotiations.

## Shorter Way to Baghdad ?

THE number of frontiers traversed by passengers in the through Haydarpasa (Istanbul)—Baghdad sleeping car of the "Taurus Express" will be lessened if this vehicle is routed over a new line being built by the Turkish State Railways. The section from Gaziantep to Karkamis is due to be opened in October, and if the Baghdad portion of the "Taurus Express" uses it, from Fevzipasa direct to Karkamis, running into the United Arab Republic (Syria) at Aleppo and out again will be avoided. The latter city may be considered a traffic centre important enough to justify the present detour. It will still be necessary for travellers to and from Iraq to pass through the U.A.R. in the Nusaybin-Telkotchek area. The re-routing was discussed at the recent conference in Istanbul attended by the managements of the Turkish State, Syrian, Iraqi Republican, and Lebanon State Railways, and of the Cie. Internationale des Wagons-Lits. The journey times between the Bosphorus and Baghdad are unnecessarily prolonged by frontier formalities, which also inconvenience travellers. Any simplification of these complexities will add to the attractiveness of this route between Europe and the Middle East.

### Publicising Diesel Pullman Services

**F**OLLOWING the introduction in July of diesel Pullman services in the London Midland Region of British Railways, and the favourable reception received from all quarters, the task of stimulating interest in similar de-luxe Pullman trains in the Western Region has been made very much easier. Considerable effort has, however, been made by the Regional Public Relations & Publicity Department to present the appeal of high-speed luxury travel, and an example of this is shown in the poster reproduced on page 288. This was printed in six colours by Waterlow & Sons Ltd., and 1,000 copies will be distributed throughout British Railways. The two services to be introduced on September 12, will be between Wolverhampton, Birmingham and Paddington, the "Birmingham Pullman," and between Bristol and Paddington, the "Bristol Pullman." Unlike the "Midland Pullman" there will be first and second class accommodation available, but the schedules are designed mainly to meet the requirements of the business executive. Meals and refreshments will be served throughout the trains to the traditional high standards maintained by the Pullman Car Co. Ltd.

### Advance Planning of Coal Transport

**T**HE continued shortage of men in key grades in certain areas of British Railways might cause interruption to rail movement of industrial and domestic coal during the winter, as stated in our August 12 issue. Estimates by the National Coal Board of the output of its several Divisions over the next few months are being examined by the Commission to see how best traffic can be handled, including diversion to routes not normally used. A realistic view is being taken: if necessary, despatches by road will be arranged to supplement rail movements. Both the Board and the Commission bear in mind that peak output of coal occurs when winter weather causes conditions for railway operating to be at their worst. In the meantime they ask for the co-operation of consumers in taking delivery of as much coal as possible between now and December. The merchants, it is stated, have been parties to the discussions and have promised to build up stocks and distribute the maximum amount before the end of the year. By advance planning it is hoped to avoid the extemporised diversion necessary last Spring.

### Visit to Europe of Malayan General Manager

**D**IESEL motive power is one of the matters to which Dato Ahmad bin Perang, Deputy General Manager of the Malayan Railway, is paying special attention on a visit—though on holiday—to Britain and Central and Western Europe. He is accompanied by Inche Ja'afar Tahar, Secretary of the Malayan Railway Corporation. Earlier this week he travelled by the "Midland Pullman" from St. Pancras to Leicester and back, and sampled the comfort and riding qualities of one of the two diesel-electric multiple-unit sets built by the Metropolitan-Cammell Carriage & Wagon Co. Ltd. The Malayan Railway is reported to be considering fast multiple-unit services, within the speed restrictions imposed by the metre gauge, between Kuala Lumpur and the larger towns to combat road competition. In the meantime the English Electric 1,500-h.p. diesel-electric locomotives, though highly powered for their present duties, are giving satisfaction. Mr. R. C. Bond, Technical Adviser, British Transport Commission, welcomed Dato Ahmad bin Perang on Tuesday at a cocktail party given by the United Kingdom Railway Advisory Service, at the Charing Cross Hotel, London, W.C.2. The company included the Acting High Commissioner in London for the Federation of Malaya, Tunku Ja'afar, and representatives of the Ministry of Transport and of other Government Departments, of the British Transport Commission, and of trade associations concerned with railways.

### Belgian Fare Concessions

**I**T is not only in Britain that questions constantly arise in regard to raising passenger fares, not merely because of constantly rising wage rates but also because of charges or decrees over which the railways have no control. Usually standard passenger fares in any fully developed country are of

somewhat restricted application, partly because concessions of various kinds are made by the railway to encourage travel, and partly because there are certain compulsory concessions to pensioners and others. Probably in no country are the effects of all these measures shown to a greater degree than in Belgium, certainly as far as Western Europe is concerned. As an approximate figure, 60 per cent of all tickets issued by the Belgian National Railways are under one concession or another, bringing them below standard fare. Many of these are to railway pensioners. Though the Belgian National Railways has, by improved operation and equipment, been able to cut down the number of employees from 92,000 to 71,000 over the last 13 or 14 years (with a corresponding increase of 30 per cent in productivity per employee), not all of this has been possible by dismissals because of redundancy, and many employees have been pensioned off before the normal time. The result is that today the S.N.C.B. has 70,000 pensioners. It would be interesting to hear of any other railway which has a ratio of 1:1 between active workers and pensioners, which is the result of political pressure.

### Growth of Personal Transport

**E**IGHT million private motorcars and well over a million motorcycles and similar vehicles are now licensed in the United Kingdom, among a population of 50 million. Their number is increasing fast. In May 84,000 private cars were registered, against 57,000 in May, 1959. The cumulative totals of registrations during the five months, January to May, were 386,000 in 1960 and 267,000 last year. In 1959, despite the growth in ownership of private road transport, railway traffic was reported by the British Transport Commission to be "surprisingly good." The number of passenger journeys on British Railways in 1959 was some 1,069 million, or 1.9 less than in the previous year. Last June, at 82 million, it was 3.5 per cent less than a year ago, but motoring on holidays must be considered, as must the growth of trains on excursion and other reduced fare tickets. The road congestion and other drawbacks of motoring, compared with rail travel, at summer weekends are increasing—a fact of which the railways have been prompt to take advantage in their poster publicity. The population and public spending power are rising. As train services are improved by introduction of diesel and electric traction, travel on business and on holiday is likely to increase, despite the multiplication of road vehicles; but branch line traffic may be expected to decrease, as may local traffic to and from some provincial towns.

### Selling Railway Services

**O**F at least equal importance to providing improved services is ensuring that those services are well used, and salesmanship is an art which must keep up with the times. Its technique, although basically constant, varies in detail almost from day to day as customers' requirements and viewpoints change; but this is not always so—in some areas, yesterday's method may still produce results and in fact may be the only way to produce results. The capacity of being able to decide the most effective approach in each case marks off the successful salesman in any field. It is an especially necessary qualification of the railwayman if he is to make headway against the prejudice which sometimes exists against railway services as a whole. Because of this, British Railways salesmen are not only trained with very great care; they also receive the authority to make decisions quickly and aptly. On pages 278 and 279 of this issue, Mr. W. H. Vine, Commercial Officer, North Eastern Region, British Railways, explains how this is done in his Region.

### Long-Welded Rails in Switzerland

**B**Y the end of 1959 the Swiss Federal Railways had laid in all a little over 120 miles of continuously-welded rails, over a period of four years. The ultimate aim is to have between 40 and 45 per cent of the track continuously welded; over the remainder of the system it is considered that the curves are too sharp and the gradients too steep to favour the practice. Past experience gained by increasing the standard rail lengths by degrees from 12 to 18, 24, and 36 m. showed that no proportionate increase in the gap between the rails at the joints



was needed with each rail-length increase given sufficiently secure rail fastening and adequate ballast. This has prompted the decision to weld. Experiments have shown that with every increase or decrease of 1°C. in temperature, the pressure or tension produced in the standard Swiss Federal No. 1 rail increases by about 1.5 tonnes; in extremes of temperature it can rise to as much as 120 tonnes. As the radius of curves is reduced, the tendency of such pressure to distort the track is intensified, and it is for this reason that continuous welding of the most curved main lines, such as the Gotthard, is not contemplated.

### Large Light-Alloy Wagons

THE recent exhibition of light-alloy rolling stock and motive power held at Strasbourg focused attention on the numerous activities of European railways and builders in this direction over the last quarter of a century or so, but it was not possible at that exhibition to emphasise the work done in North America. Yet that is of importance; and just recently the Southern Railroad seems to have turned over to aluminium alloys for all new mineral and bulk goods cars. During the present year it has received no fewer than 1,205 large hopper and gondola wagons in which the whole of the bodies and underframes have been of light alloy except a few details such as cast hopper openings, shaker brackets and hinge pins. Of the above total 75 covered hoppers have a capacity of 4,710 cu. ft., and are four-section cars to handle grain, feeding stuffs and the like; another 180 cars are triple hoppers of 3,820 cu. ft. for alumina; and 750 cars are gondolas of 3,620 cu. ft. capacity for coal traffic. Light weights vary from 43,600 lb. to 57,500 lb. for load capacities of 193,500 lb. to 207,400 lb., and empty weight varies from 17½ to 25 per cent of the gross moving load.

### The Last Slip Coach

WITH the introduction of the winter timetables, the last survivor of the once-numerous slip coach services in Great Britain is being withdrawn. The slip coach is a peculiarly, though not exclusively, British feature of railway operation, for there have been examples in Ireland, France, and Holland. The earliest were introduced in 1858 by the L.B.S.C.R. and the S.E.R., closely followed by the G.W.R.; the last-named was always their principal exponent. At the turn of the century there were 124 slip services in this country, and the total had grown to nearly 200 by the outbreak of the first world war, during which nearly all ceased. The Great Western was the only railway to revive the practice on a considerable scale after that war, but its maximum of 79 in 1908 had fallen to 47 in 1924, and to 23 ten years later. There was a complete suspension in the second world war, followed by re-appearance to a limited extent in the Western Region. With the timetable of September 12, 1958, only three survived. Two have since ceased, and the last—that at Bicester—is now to be discontinued.

### Ceylon Power

DISCUSSING the general position and operation of the Ceylon Government Railway almost a year ago, the General Manager, Mr. B. D. Rampala, emphasised the rejuvenation of the Colombo suburban services, and, on the southern line, the outer suburban services and other passenger traffic as far as Galle, 70 miles, and Matara, 100 miles, by the use of diesel railcar trains. This began as long ago as 1938 with the old English Electric multi-car trains, but Mr. Rampala referred to the modern standard diesel-hydraulic railcars of 800/880 b.h.p. pulling several trailers. At that time, 20 by Schindler were at work, and 25 generally similar vehicles by M.A.N. were about to be delivered. Now, as recorded on page 288, another five of the last-named class have been ordered from M.A.N., and this closes the requirements of the C.G.R. for this type of motive power. These bogie railcars are notable in having all four axles driven by a single engine-transmission group near the centre of the car, and so a comprehensive cardan shaft layout is a vital part of the whole design, though at the moment confined almost entirely to the southern route, these cars are capable of use on passenger trains on the northern main lines.

### Mount Isa Line Rehabilitation

ACCEPTANCE of the tender submitted by an international group of companies headed by Hornibrooks Limited of Queensland, for reconstruction between Richmond and Duchess, signals the start of the first major work on the Townsville-Mount Isa rehabilitation project for the Queensland Government Railways. The tender price for this first section of 242 miles was £1,833,000, and was the lowest submitted. This tender covers actual work of track-laying and any realignment, the contract for 32,000 tons of 80-lb. rails having been given to Broken Hill five months ago.

The Great Northern Line in North Queensland was extended in the early part of this century to serve the Cloncurry mineral field and later became the main link with the Mount Isa Mine. The mine, some 600 miles west of the port of Townsville, is expanding its production of copper, silver, lead, and zinc and the 3-ft. 6-in. gauge line is unable to cope with the increased output. The results achieved so far have made Mount Isa the greatest single mineral producer in Australia, with a daily production of more than 8,000 tons of ore, and an estimated annual earning of £20,000,000. In the last three years, more than £20,000,000 has been spent to double the production rate, and although the company claims only 45,000,000 tons of ore reserves, unofficial estimates place the figure as high as 200,000,000 tons.

The fuel for the power at Mount Isa is coal, mined at Collinsville, south of Townsville. Not only must the Townsville-Mount Isa line carry the ore from the mine, but it must carry large tonnages of coal from Collinsville to Mount Isa to satisfy the demands of the two power stations and the third electricity generating station in process of construction. It was therefore obvious that if the full benefits of the planned Mount Isa expansion were to be realised, something would have to be done to rehabilitate the 603-mile link with the coast.

The report of a New York firm of consulting engineers called for an expenditure of £30,000,000 to meet the traffic requirements likely to be encountered, not only from the Mount Isa Mine, but also from the output of the uranium mine at Mary Kathleen, which is only a few miles from Mount Isa. Recently, the Commonwealth Government granted the State of Queensland a loan of £20,000,000 to carry out this work, the balance being found by the Queensland Government.

Large quantities of ballast will be required for the project, and steps are being taken to find quarries along the line. This will present some problems as large stretches of the line pass through country which provides no stone at all. Quarry sites have been located at three points, but considerable haulage of the ballast will be involved because the quarries are located outside the area of main operations which traverses country of black soil origin. The £30,000,000 expenditure will cover the laying of the line, the reconstruction of some 300 bridges in steel and concrete or concrete, a large mileage of deviations for the improvement of grades, a new major high-level steel and concrete bridge over the Burdekin River between Townsville and Charters Towers, the lengthening of crossing loops from Collinsville through to Mount Isa, duplication of six miles of track, new marshalling yards, diesel fuelling and servicing facilities, improved station buildings at Mount Isa and Townsville, 12 to 15 diesel-electric locomotives, and some 400 to 500 wagons. Contracts have already been placed with the English Electric Co. (Australia) Ltd. for five 1,500-h.p. diesel-electric locomotives, and with the Commonwealth Engineering Co. (Qld.) Ltd. for 200 20-ton four-wheel hopper ballast wagons.

The 42-lb. rails are to be replaced with 82-lb. rails. At present the line has 60-lb. and 42-lb. rails. Alteration of railway wagons to be used in the construction work has been undertaken. Conversion of 50 "W" type wagons to "WR" class has been carried out and plough mechanism fitted to 15 wagons for use in ballasting. It is estimated that £1,500,000 will be spent in the current year, and this will be followed by £6,700,000 in 1960-61; £7,600,000 in 1961-62; £6,900,000 in 1962-63; £3,500,000 in 1963-64; and £800,000 in 1964-65.

The reconstructed line will undoubtedly permit longer and faster trains, possibly up to 1,000 tons, to be hauled by 90-ton diesels; speed limits will be raised from 30 m.p.h. to 50 m.p.h. Inevitably a change will take place at the locomotive depots at Charters Towers, Torrens Creek, Hughenden, Richmond, Julia Creek, and Cloncurry, because the diesel locomotives

will be able to carry enough fuel to travel from Townsville to Mount Isa.

Not only will this project mean the quick and efficient transport of the products of Mount Isa and Mary Kathleen, but it will undoubtedly be a step towards the further development of north-west Queensland. As this area borders the Barkly Tableland of the Northern Territory, greater numbers of cattle could be expected to be transported on this line. In fact, this project is of incalculable value to Australia, and could be the power to accelerate development of North Queensland. It may be that Mount Isa and Mary Kathleen are only the fore-runners of more mineral development in this area.

Sir Norman Kipping, Director General of the Federation of British Industries, who last year toured Australia, has stated that the decision to develop the Townsville-Mount Isa line would influence British companies to continue to establish industries in Queensland. In fact, he predicts an influx of more specialist manufacturers.

### Equatorial African Developments

THE importance of the line—the Congo-Océan Railway—in the first Republic of the Congo, that is the old French Equatorial Africa, is likely to increase soon by the construction of the new railway of the Cie. Minière de l'Ogooué, the manganese mining company whose ore properties are in the neighbouring Republic of Gaboon. From the ore deposits at Moanda, a *téléphérique* is to convey the ore for about 76 km. (47 miles) to the frontier of the two republics, where it will be transferred to the new railway of 3 ft. 6 in. gauge which is to run generally southward for 180 miles to join the Congo-Océan Railway at a point about 125 miles from the Atlantic port of Pointe Noire. The ore will thus have a total journey of 352 miles to the seaboard. Work on the construction of the line from the frontier at M'Binda to the Congo-Océan Railway began in September 1959, and recently the General Electric Company (U.S.A.) received an order for six diesel-electric locomotives to form the initial motive power. According to the plans now being followed, there will be three viaducts of 310, 394 and 575 ft. total span, more than 60 smaller bridges and 730 culverts in the 180 miles, and there are to be seven stations. Additional to the manganese ore traffic, it is hoped to develop the transport of the African akoumé wood, large forests of which have so far been unexploited because no transport means existed. New harbour facilities are being provided at Pointe Noire, so that up to 1,200 tons of ore an hr. can be discharged into the ships.

Construction of the *téléphérique* is said to be on the principles developed by the British Ropeway Engineering Co. Ltd., though actual construction is in the hands of Italian, Saar German and French companies, as is the building of the railway section. The cableway is to be in five sections of 8½ to 10 miles each, with a capacity of 150 tons an hour and a yearly capacity which it is hoped will eventually reach a total of a million tons. On the railway section ruling gradients are to be 1.5 per cent (1 in 66) against the load and 1.0 per cent (1 in 100) against returning empties and general up-country freight. The sharpest curves are to be of 655 ft. radius, and rails to be laid are to be 60 lb. a yd. with 2,820 sleepers per mile.

As to the Congo-Océan Railway itself, it will be remembered that this 317-mile 3 ft. 6 in. gauge line, built by the French and now worked entirely by diesel locomotives and railcars, was completed in the early 1930's to link the then new Atlantic port of Pointe Noire with the French river port of Brazzaville on the north bank of the Congo river, just above the series of rapids which prevent river-borne traffic going all the way down to the sea at Boma. Its object was to keep all traffic coming down river from the territories on the north bank in French hands, in preference to using the Matadi-Leopoldville line along the south bank and the two ports of these names, all of which were Belgian. Today it seems likely that traffic along the Congo-Océan Railway may increase still further by the probable development of the Oubangui and southern Chad territories, in which a long north-south railway is projected to link Berbere, south of Fort Lamy, with the up-river Congo port of Bangui; and this project may be extended to include a railway from Berbere to Fort Lamy, for it is not considered that the River Chari could handle the tonnage which might develop in another ten or a dozen years. That is, the soundness of the reasoning leading to the construction of the Congo-Océan line is likely to be re-confirmed 30 and more years later.

### Western Region Winter Passenger Services

PLACING in service on September 12 of the new Western Region diesel Pullman trains will involve cancellation or alteration of various other services from Mondays to Fridays inclusive. From Bristol the morning "Bristol Pullman" will leave at 7.45 a.m. and be non-stop to Paddington via Badminton in 110 min. (64.1 m.p.h.) arriving at 9.35 a.m. The 8.30 a.m. from Bristol to Bath and Paddington will be withdrawn, and the 9 a.m. up will start 10 min. earlier, call additionally at Chippenham (9.29/9.31 a.m.) and reach Paddington at 11.8 a.m. as now. The Pullman set will then return to Bristol at 10.5 a.m., non-stop to Bath in 95 min. (67.5 m.p.h.) arriving Bristol at 12 noon; the 10.5 a.m. from Paddington to Weston-super-Mare will cease to run and the 11.5 a.m. "Merchant Venturer" will call also at Chippenham (12.38/12.41 p.m.) and be 7 min. later into Bristol (1.20 p.m.).

The next up Pullman journey will be at 12.30 p.m. from Bristol and 12.45 p.m. from Bath, due Paddington at 2.25 p.m.; the present non-stop 11.45 a.m. up will be cancelled, and the 12 noon train will start at 11.30 a.m. and be 30 min. earlier throughout to London. The 1.50 p.m. up from Bristol will start at 1.30 p.m., preserving the hourly sequence, and arrive at Paddington at 3.50 instead of 4.10 p.m.; this train will still continue its 68.8 m.p.h. run from Swindon to Reading. The final daily working of "Bristol Pullman" will be at 4.55 p.m. from Paddington, non-stop to Bristol at 110 min.; in consequence the present 5 p.m. to Bath, Bristol, and Weston-super-Mare will be cancelled, but the 5.5 p.m. will become a restaurant car train, omit all stops between Swindon and Bath, and reach Bristol at 7.52 and Weston at 8.37 p.m., 44 min. earlier. The 4.55 p.m. "Cheltenham Spa Express" will start at 5 p.m., and run 5 min. later.

The "Birmingham Pullman" will leave Wolverhampton at 7 a.m., replacing the present 6.45 a.m. to Paddington. Leaving Birmingham at 7.30, Solihull, at 7.40, and Leamington at 8 a.m., it will be due in Paddington at 9.35 a.m., simultaneously with the "Bristol Pullman." There will be a midday working of the Birmingham set at 12.10 p.m. from Paddington, filling in the gap in the present sequence of departures, and with one stop, at Leamington, it will reach Birmingham at 2.5 p.m.; the return is at 2.30 p.m., also on a schedule of 115 min., the fastest yet scheduled over the Western Region route. The last run will be from Paddington at 4.50 p.m. to Leamington, Solihull, Birmingham (6.55 p.m.) and Wolverhampton (7.20 p.m.). The 6.10 p.m. down will call additionally at Leamington and be 8 min. later into Birmingham (8.28 p.m.) and Wolverhampton, but will reach Chester at 11.16 p.m., as now. The 6.23 p.m. to Wolverhampton will cease to run, but the 7.10 p.m. will call also at Bicester, Banbury, and Knowle and arrive in Birmingham and Wolverhampton 20 and 23 min. later, at 9.47 and 10.15 p.m. respectively. The 5.10 p.m. down will be 5 min. later into Leamington and beyond as the result of stopping at Bicester (6.15/6.17 p.m.) instead of detaching slip coaches there; this is the only surviving slip coach service in Great Britain, and the practice now will come to an end. North of Shrewsbury the passenger service is being withdrawn from all stations between there and Chester other than Gobowen, Chirk, Ruabon, and Wrexham (except that Gresford Halt and Rossett will have one daily morning train into Chester and one evening train out).

The last through trains between Paddington and Weymouth are to disappear. As mentioned in our August 12 issue, the 9 a.m. from Weymouth to Paddington will terminate at Newbury, where the 8.30 a.m. from Plymouth will be stopped (12.17/12.19 p.m.) to pick up through passengers, but will continue to reach Paddington at 1.25 p.m., as now. The 6 p.m. from Paddington to Weymouth is to be cancelled, but through Weymouth coaches will be attached to the 5.30 p.m. Plymouth express, of which the starting time will be altered to 5.50 p.m. By running the 53.1 miles from London to Newbury in 52 min., and the 89.6 miles thence to Taunton in 86 min., and further accelerations beyond, this express will recover the effects of a 6-min. Newbury stop and continue to take 4½ hr. to Plymouth.

The "Torbay Limited" is to forsake its time-honoured 12 noon departure from Paddington and leave at 12.30 p.m. It will be accelerated to reach Exeter, 173.5 miles, in 165 min. (63.1 m.p.h.), Torquay in 3 hr. 27 min., and Kingswear in 4 hr. (10 min. less than now); all these are the fastest times on record. The 1.30 p.m. "Royal Duchy" will be 20 min. faster west of



Plymouth and reach Penzance at 9 p.m. The 6.25 a.m. from Penzance to Paddington will start 30 min. later, but pick up its present times from Newton Abbot; there will be a new 6.25 a.m. from Penzance, 32 min. faster to Plymouth, where it will terminate. The 8.45 and 9.30 p.m. trains from Penzance to Paddington also will start 15 min. later, but be unaltered from Plymouth. These substantial Cornish accelerations are the result of substitution of diesel for steam power, and further accelerations may be expected next year.

### British Transport Commission Traffic Receipts

THE bank holiday fell in Period 8, the four weeks ended August 14, 1960, and August 9, 1959, and some diminution in despatches of merchandise was to be expected; but it is discouraging to see a drop in merchandise receipts of £48,000 compared with last year. At £6,457,000, merchandise traffics for the four weeks compared with £7,922,000 for Period 7. In many manufacturing and trading businesses there is no Saturday work, so that the bank holiday would cost one working day, or perhaps a half-day more in some cases. Against this, some firms closed for annual holidays during the four weeks to August 9/14. Whatever the reason, merchandise traffic for British Railways as a whole is disappointing, but it will be interesting to see the analysis by Regions, which will be published next month.

Mineral receipts seem to have continued to increase, with allowances for seasonal reduction of activity in the industrial plants concerned; at £3,054,000 they exceeded last year's figure for Period 8 by £330,000.

	Four weeks to		Incr. or decr.	Aggregate for 32 weeks to		Incr. or decr.
	Aug. 14, 1960	Aug. 9, 1959		Aug. 14, 1960	Aug. 9, 1959	
<b>Passengers—</b>	£000	£000	£000	£000	£000	£000
British Railways ...	17,001	16,174	+ 827	94,283	86,834	+ 7,449
London Transport						
Road Passenger Services ...	4,365	4,273	+ 92	34,749	33,300	+ 1,449
Railways ...	1,978	1,778	+ 200	15,669	14,498	+ 1,171
Provincial & Scottish buses ...	6,101	5,988	+ 113	37,927	37,135	+ 792
Ships ...	1,497	1,493	+ 4	4,676	4,549	+ 127
<b>Total passengers ...</b>	<b>30,942</b>	<b>29,706</b>	<b>+1,236</b>	<b>187,304</b>	<b>176,316</b>	<b>+ 10,988</b>
<b>Freight, Parcels &amp; Mails</b>						
British Railways—						
*Merchandise & livestock ...	6,457	6,505	- 48	61,671	59,903	+ 1,768
*Minerals ...	3,054	2,724	+ 330	29,746	26,457	+ 3,289
*Coal & coke ...	5,570	5,643	- 73	64,693	67,541	- 2,848
*Parcels, etc., by coaching train ...	4,186	4,005	+ 181	33,901	32,599	+ 1,402
*Total freight, British Railways	19,267	18,877	+ 390	190,011	186,500	+ 3,511
Others† ...	4,111	3,926	+ 185	34,627	33,185	+ 1,442
<b>Total freight, parcels &amp; mails ...</b>	<b>23,378</b>	<b>22,803</b>	<b>+ 575</b>	<b>224,638</b>	<b>219,685</b>	<b>+ 4,953</b>
<b>Total ...</b>	<b>54,320</b>	<b>52,509</b>	<b>+ 1,811</b>	<b>411,942</b>	<b>396,001</b>	<b>15,941</b>

\* Includes receipts from collection and delivery and from railway freight traffic within Commission-owned dock areas

† Inland waterways freight, road haulage, and ships

As to passenger traffic by all forms of transport, there are reports that the August bank holiday weekend tends to stand out less as a peak, largely because so many people now take an annual fortnight's holiday and travel at other weekends. British Railways passenger receipts for Period 8 at £17,001,000 were only a little more than for these four weeks of last year. In view of the seasonal increase in holiday traffic expected towards the end of July, and of the bank holiday, this figure is not high compared with £14,600,000 for the preceding period.

To what extent ships' passenger receipts during the four weeks were affected by the seamen's strike it is impossible to date; many passengers would have booked some time before travel to the Continent or Ireland. The increase of only £4,000 over ships' receipts for Period 8 of 1959 seems to show that this summer was not proving a bumper one for railway shipping services even before the strike began.

For 32 weeks of the current year the total traffic receipts of the Commission were only some £16 million more than for the corresponding three-fifths of 1959. This is disappointing. The increase will have to be much greater to make any substantial alteration in the financial position of the nationalised transport undertaking.

### PERCENTAGE VARIATION 1960 COMPARED WITH 1959

	Four weeks to August 14		32 weeks to August 14	
	1960	1959	1960	1959
<b>British Railways :</b>				
Passengers ...	+ 5.1	+ 8.5		
Parcels ...	+ 4.5	+ 3.9		
Merchandise & Livestock ...	- 0.7	+ 2.9		
Minerals ...	+ 12.1	+ 12.4		
Coal & Coke ...	- 1.2	- 4.2		
<b>Total ...</b>	<b>+ 3.4</b>	<b>+ 4.0</b>		
<b>Ships (passengers) ...</b>	<b>+ 0.2</b>	<b>+ 2.7</b>		
<b>British Road Services, Inland Waterways &amp; Ships (cargo) ...</b>	<b>+ 4.7</b>	<b>+ 4.3</b>		
<b>Road Passenger Transport Provincial &amp; Scottish ...</b>	<b>+ 1.8</b>	<b>+ 2.2</b>		
<b>London Transport :</b>				
Railways ...	+ 11.2	+ 8.0		
Road Services ...	+ 2.1	+ 4.3		
<b>Total ...</b>	<b>+ 4.8</b>	<b>+ 5.4</b>		
<b>Aggregate ...</b>	<b>+ 3.4</b>	<b>+ 4.0</b>		

### Rhodesia Railways

THE report of the Rhodesia Railways for the 12 months to June 30, 1959, has been sent to us by Mr. J. W. S. Pegrum, the General Manager. No direct financial comparison is possible of the results with the previous period because the financial year of the Railways was adjusted during 1957-58 so that while the latest report covers 12 months, the previous accounts were for the 15 months to June 30, 1958.

The year to June 30, 1959, was, from the revenue aspect, particularly difficult, and the effect of the world-wide recession which was becoming apparent during the latter months of the previous financial period was in much greater evidence. The result was a net deficit of £1,808,386. The deficit would have been some £900,000 more than originally estimated but for the 10 per cent rise in rates and 20 per cent increase in fares which became effective on May 1, 1959. The deficit was met from moneys held in the Rates and Wages Stabilisation Account, which now stands at £966,561. Earnings from all services totalled £27,866,379, and working expenditure £25,758,869.

The following are some of the principal results:—

	1957-58	1958-59
Miles open ...	2,736	2,736
Gross ton-miles (thousands) ...	9,763,258	8,951,119
Average haul (miles) ...	384	372
Tonnage conveyed:		
General merchandise ...	5,226,424	4,782,712
Coal and coke ...	3,742,201	3,428,932
Minerals ...	2,914,777	2,745,588
<b>Total ...</b>	<b>12,024,337</b>	<b>11,159,471</b>
<b>Total passenger journeys ...</b>	<b>4,531,440</b>	<b>4,643,587</b>
<b>Receipts:</b>	<b>£</b>	<b>£</b>
General merchandise ...	17,906,818	12,693,572
Coal and coke ...	4,145,943	3,054,359
Minerals ...	10,929,983	7,894,723
Coaching ...	2,583,219	2,090,785
Road motor ...	997,192	833,604
<b>Total revenue ...</b>	<b>38,209,720</b>	<b>27,866,379</b>
<b>Total expenditure ...</b>	<b>37,212,528</b>	<b>25,758,869</b>

\* Fifteen months to June 30, 1958

Over recent years, Rhodesia Railways has acquired large numbers of additional locomotives and rolling stock to move anticipated traffics, but the full impact of maintenance of these items has not yet been felt by the administration. The provision for depreciation of unit assets has already increased, as a result of present-day enhanced costs of assets replaced, and in addition a reduction in the depreciation lives of certain locomotives and rolling stock with effect from July 1, 1959, decided upon as a result of an appraisal of future trends in respect thereof, will, together with the aforementioned factors, inevitably cause an increase in future railway working costs.

Only two categories of freight traffic showed an increase in the 12 months to June 30, 1959 (as compared with the 12 months to June 30, 1958): livestock, up 61,304 tons to 202,239 tons, and copper freights 57,956 tons more at 697,511 tons. Overall, there was a net decrease in tonnage carried of 864,866 tons to 11,159,471 tons. This decrease, Mr. Pegrum points out, he had foreshadowed, although towards the end of the period under review there were indications of a revival in certain traffics offering, and at all times during the year the railways' potential to convey traffic was above the demand for its services.

Passengers of all classes by rail totalled 4,643,587 and by road 349,926, representing increases of 112,147 and 24,636

respectively on the previous year. Fixed assets of the system are approaching £100,000,000, having advanced during the latest period by £4,693,955 to £96,954,246.

Approval has been given to the re-laying of 155 miles of main line between Kafue and Broken Hill, and a portion of the line between Thomson Junction and Livingstone with 91-lb. rail on hardwood sleepers. Installation of Centralised Train Control, with power-operated points, between Bulawayo and Wankie, was completed in December, 1958, and extended to

Thomson Junction in February, 1959. Substitution of power-operated for hand-operated points over the original C.T.C. section between Gwelo and Heany was also completed. Work has commenced on the provision of C.T.C. from Umtali to Gwelo, and from Thomson Junction to Ndola.

During the year 11 new locomotives were placed in service, while six steam locomotives were withdrawn, the total complement at the year-end being 433, or four more than at June 30, 1958.

## LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

### The Waterloo-Hounslow Line

August 23

SIR,—Forty years ago, when the train service on the Hounslow line was very similar to today, I enquired why more trains were not provided to attract, more particularly, women, who did not like to wait for up to half an hour at stations, but preferred to take longer on their journey by untimed frequent buses and Underground trains.

The reply was that the line was too much occupied with freight trains to and from Feltham Yard to allow additional trains under the signalling conditions at that time.

Since then the population and building in the area served have probably doubled and the buses increased accordingly, but the Southern Railway and Southern Region train service has remained constant. Now the district served is almost entirely built up.

For the discerning, the Hounslow line trains are very valuable. My neighbour for a number of years at Chiswick found that he used frequently to reach the War Office, where he worked, more quickly by Southern Electric and in greater comfort than he used to do when living at Cheyne Walk, Chelsea.

Yours faithfully,

C. GRASEMANN

8, Napier Court, London, S.W.6

### Out-of-Category Staff Salaries

August 24

SIR,—With reference to the report in your issue of August 19, it would appear that—not for the first time—the British Transport Officers' Guild is responsible for misleading statements from which it could be wrongly inferred that that organisation is solely responsible for negotiating with the British Transport Commission improvements that have been secured in the conditions of British Railways out-of-category staff.

As pointed out in a letter from me published by you as recently as April 8, the Transport Salaried Staffs' Association is a party to the Joint Committee of Negotiation; and in actual fact the T.S.S.A. members on the Joint Committee took the leading part in the negotiations on both the items referred to in the article in question. As mentioned in my letter just referred to, the award of the chairman of the Railway Staff National Tribunal (dated September, 1958) provided that any increase which might result from negotiations between the parties in the course of their review of the salary structure and salaries of the out-of-category staff, should be applied from the same date upon which increases resulting from the review of the salary structure and salaries of the classified grades were made effective; and of course the B.T.O.G. was not a party to the Railway Pay Committee of Inquiry (the "Guillebaud Committee").

The 10 per cent increase for the out-of-category staff from January 4, 1960, is in line with the general increase of 10 per cent from the same date for the classified salaried staff arising from the negotiations on the report of the Railway Pay Committee of Inquiry, to which negotiations the B.T.O.G. was not a party.

With regard to the implication in the article that the increases in the meal allowances and day-and-night expenses were agreed "as a result of applications made to the Commission by the Guild," I have to say that the T.S.S.A. had submitted

an application for increases in expenses and lodging allowances on the ground that such payments to the classified salaried staff had been increased; and as a matter of fact this point was the principal argument used in inducing the Commission's representatives to agree to the improved allowances for the out-of-category staff. Here again, the increases took effect from the same dates for both groups of salaried staff.

Yours faithfully,

W. J. P. WEBBER  
General Secretary

Transport Salaried Staffs' Association,  
10, Melton Street, London, N.W.1

### Vertical Curves

August 26

SIR,—In calculating vertical curves between lengths of track at different gradients, it appears to be the universal custom to use twice the radius at a "sag" to that used at a "summit." There seems to be no dynamic or mechanical reason for this procedure, especially as locomotives with a long rigid wheelbase are being superseded.

In hump marshalling yards, the use of a sharper radius for the vertical curves at the foot of the hump would go a long way to improving the separation between successive wagons and, therefore, the performance of the yard.

Can any of your readers tell me how this custom developed, and whether there is any reason at all why the same radius should not be used for both "sag" and "summits" in marshalling yards where speeds never exceed 20 m.p.h.?

Yours faithfully,

N. J. B. ALEXANDER, B.A., GRAD.I.C.E.

11, Berry Lodge,  
Crouch Hill, London, N.4

### Brake Hose Couplings on Wagons

August 25

SIR,—You published my letter on this subject in the July 29 issue of *The Railway Gazette*. In it I suggested that someone had blundered in fitting the brake hose on the buffer beam on all new wagons because such a position made it much more difficult to couple the hose, resulting in possible serious delays to getting trains out of the yards.

I have now been informed of the real reason for fitting the hose in this position, and I quote: "It is not, as might be thought, pennywise economy to save a few feet of pipe, but because tests have shown that the rate of propagation, when admitting air to or exhausting it from a train pipe, is far more affected by the number of sharp bends than by the actual length of the pipe. With a stand pipe, a right-angle bend is required at the headstock and then a 160 deg. bend at the top of the stand pipe, whereas with a headstock connection, only a slight set in the pipe is required. This is so advantageous when anything more than 15 vehicles have to be coupled that the inconveniences must be accepted in order to take advantage of it."

In other words, it is more important to have an efficient and safe brake than to cut the time of coupling up in the marshalling yards.

Yours faithfully,

G. RICHARD PARKES

The Thorns, Hadfield, Manchester



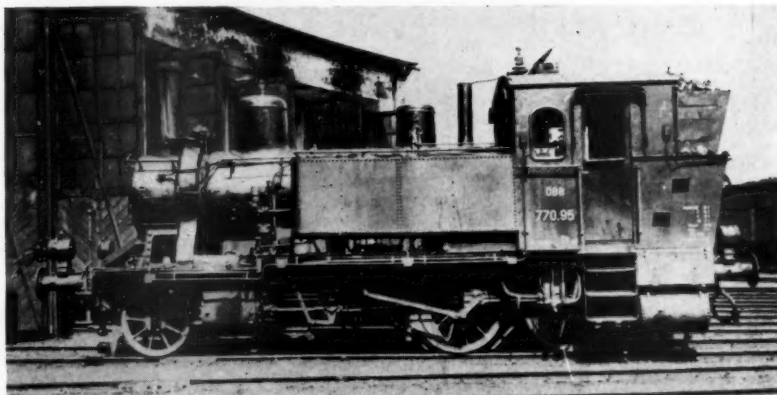
## THE SCRAP HEAP

### Shaggy Dog

A would-be passenger asked a London bus conductor if she might bring her dog aboard. When he refused—this is a matter for conductors' discretion—she asked him why. "Their 'air," he said, "comes out, this wevver."—"Peterborough" in *"The Daily Telegraph."*

### Scrapping an Unusual Tank Class

One of the most curious steam locomotive classes ever to run on German and Austrian railways is now more or less extinct. This is the standard-gauge 2-4-0T, known as Class 70 on the German Federal Railway and as Class 770 on the Austrian Federal Railways. These locomotives originated on the Bavarian and Baden State Railways in 1909-14, and were constructed by Krauss at Munich; but a further batch was built for the Reichsbahn in 1927 by Krupp. After 1938 some of them went to the Austrian railways, and one of these is shown at St. Pölten shed in the illustration. Several locomotives lying derelict at Rosenheim (D.B.) and St. Valentin (O.B.B.) have now gone to the scrap heap. The almost incredible division of the wheelbase was 13 ft. 1 in., plus 4 ft. 8 in. A 12-element superheater was fitted from the beginning. Cylinders were 14.7 in. x 19.7 in., with 5.1-in. piston valves; wheel dia. was 49.5 in., evaporative heating surface 620 sq. ft.,



*Austrian Federal Railways 2-4-0 tank locomotive with 13-ft. 1-in. plus 4-ft. 8-in. wheelbase. These special branch-line units are almost extinct*

grate area 13 sq. ft., adhesion weight 28-30 tons, and locomotive weight 39-44 tons. Speed was limited to 40 m.p.h.

### "Sweet Sounds Inspire..."

A new "actuality" recording made by Bill Hartley Productions Limited, for Stanley Schofield Sound Stories Limited, London, provides the listener with an aural impression of a visit to Talyllyn Railway. Among the sounds recorded are the surge of sea waves, cock-crows, the tapping footsteps of an early riser,

Welsh voices, a harp, and the sound effects of the railway journey. There are also recorded interviews with people connected with the railway, including the Earl of Northesk, Chairman of the Talyllyn Railway, Edward Thomas, Sir Haydn Jones whose name is carried by one of the three engines, Councillor O. Griffiths, staff on the Railway, and members of the Talyllyn Railway Preservation Society.

### Clean Forgotten?

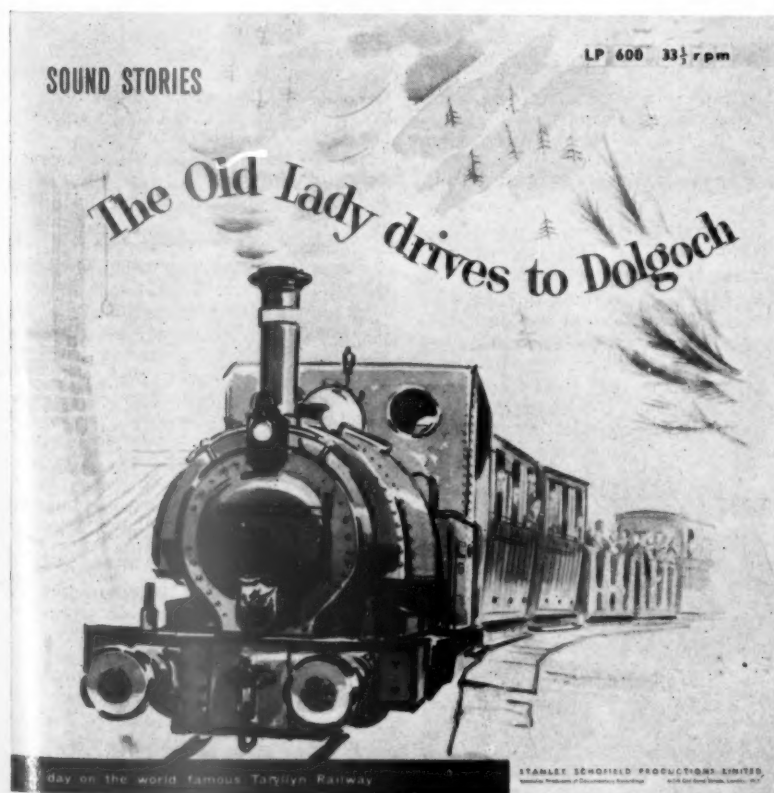
Mr. William Parker of Chepstow, aged 90 and a retired railway employee of the Shrewsbury-Abergavenny line of the London & North Western Railway, recently received a pair of spectacles in an aluminium case bearing his name. The spectacles, which he had lost 30 years ago, were found when the engine shed at Shrewsbury was being cleaned.

### Jump for Joy

A 12-yr.-old boy jumped out of a moving train on August 18 because he did not want to return to England and thereby finish his fishing holiday in Ireland. The train was travelling at 40 m.p.h. over a bridge across a road when the boy opened a carriage door and jumped. He hurtled over the bridge and fell 15 ft. to the road. He has a fractured skull but is expected to make a complete recovery.

### Oil-burning Locomotives in Roumania

Petroleum is now so largely used as fuel on the railways in Roumania that imports of coal from the United Kingdom have seriously diminished. Experiments with locomotives commenced as far back as 1888, but the real innovation did not take place until 1896, when an ingenious apparatus was discovered which obviated any change in the furnace and allowed the burning of lignite even of an inferior quality by the injection of pulverised naphtha. In 1896 about 12 engines were using petroleum, in 1898 a further 59 were added, while last year 104 were fitted with the apparatus.—From *"The Financial Times"* of August 18, 1900.



*Illustrated cover for the record featuring the Talyllyn Railway*

## OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

### EAST AFRICA

#### New E.A.R. & H. Timetable

A new folder timetable has recently been produced by the East African Railway & Harbours. It takes the place of the pocket timetable which has been published at regular intervals since 1925. All the pertinent information required by rail passengers is included in this new compact publication in which the timetables are given in the form more usually associated with airlines. All the main passenger routes by rail, road, and lake services of the E.A.R. & H. are detailed, including the through service Kenya-Uganda-Sudan and Egypt. Specimen fares and a map of the road, rail and lake services of East Africa are also included. The timetable is currently being given a wide distribution not only in East Africa but also to travel agents throughout the world.

### RHODESIA

#### Colour-light Signalling

A local colour-light signalling system controlling all train movements has just been brought into use at Dett Station. Similar local systems are in use at a number of other centres among them Somabula and Lochinvar. The C.T.C. installation is also progressing on the North line and will soon be operating between Livingstone and Matetsi. It is hoped that the Matetsi-Thomson Junction section may be completed by the end of the year in which case the 398 miles from Gwelo to Livingstone will be controlled by C.T.C. and by local colour-light installations at the busier centres. C.T.C. came into operation between Lochinvar (Salisbury) and Makwiro to-

wards the end of July, and installation work is continuing on this line towards Gatooma.

#### Level Crossing Warning Signals

Rhodesia Railways is to install five additional sets of flashlight warning signals at main road level crossings. There will be three in Southern Rhodesia and two in the North. Installation will take about two months. Those in Southern Rhodesia will be at Banket, Lions' Den, and Hunters Road. In Northern Rhodesia both installations will be on the Kitwe-Chingola road, one near Mindolo Halt and the other near Luano Junction.

### SUDAN

#### Proposed New Construction

The Sudan Gezira Board, in charge of all the cotton and similar operations in the Gezira, or area between the Blue and White Niles for many miles south of the confluence, is proposing to add very substantially to its existing narrow-gauge railway system in connection with the Managil irrigation project, which will bring much more land under cultivation. About 140 miles of new line, 60 diesel locomotives, and about 900 small freight cars are proposed. At the present time a large proportion of the Gezira Board's cotton movement is handled by Hunslet diesel locomotives.

### TURKEY

#### New Rail Construction

The railway between Nizip, in southern Turkey, and Karkamis, on the Turkish-Syrian frontier, has been completed and was taken into service on August 1. The completion of the Nizip-Karkamis

line means that Gaziantep, on a branch of the southern network, is linked directly with the main line Islahiye-Aleppo-Nusaybin, which continues to Baghdad. It is now possible, therefore, to travel along Turkey's southern frontier without crossing into Syria, and to go direct from Central Turkey to Iraq without a detour via Aleppo.

### NEW ZEALAND

#### New Express Services

Accelerated, diesel-hauled "Scenic Daylight" express passenger trains will run between Auckland and Wellington every Saturday and every Monday during the coming summer holidays. The service will begin on December 17, and will end for the season on January 30. Reduced fares will apply for travel on these trains. This was announced by Mr. Michael Moohan, the Minister of Railways, during the budget debate in Parliament on August 5. "We are encouraging people to travel by train and this service gives an opportunity for them to see the best part of the North Island scenery," he said.

### CANADA

#### Hump Yard Tests

The Canadian National Railways has begun trials at its new £5,500,000 automatic classification freight yard on the western outskirts of Moncton, New Brunswick. The yard is scheduled for completion by November 1. It will be the first C.N.R. classification yard in operation in Canada, but others are being built in Montreal, Winnipeg, and Toronto. Buildings completed include the main yard office, retarder tower, west end tower, and hump conductors office.

#### New C.N.R. Cargo Vessel

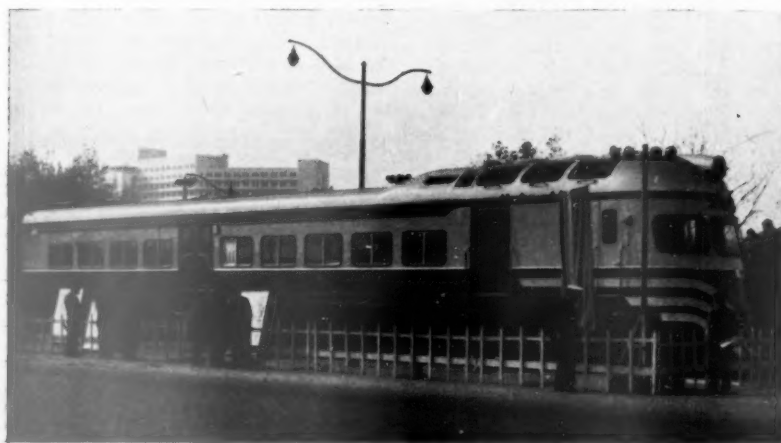
The mv. *Hopedale*, a new twin-screw geared cargo vessel destined for the Labrador service of Canadian National Railways, Newfoundland coastal fleet, has recently been launched at Collingwood, Ontario. The *Hopedale*, 310 tons and 188 ft. long, was built at Collingwood shipyards and will be operated for the Department of Transport by the Canadian National Railways. The ship will take its place in a C.N.R. fleet which, this year, is making some 70 sailings to Labrador from Newfoundland points.

#### Trans-Continental Train Accommodation

The two major Canadian railways have announced changes in passenger accommodation on trans-continental trains for the off-season. In a joint statement Mr. Donald Gordon, President, Canadian National Railways, and Mr. N. R. Crump, President, Canadian Pacific Railway, announced that each railway would continue to operate two daily trans-continental passenger trains. The C.P.R. "Canadian" and the C.N.R. "Super Continental" will continue to

### Diesel Motor Coaches for Argentina

(See our issue of June 17)



Diesel motor coach, powered by a 12-cylinder diesel engine, for the General Urquiza Railway, and built by the Fiat group of companies



provide fast trans-continental service with a variety of accommodation, but with effect from September 24, the C.P.R. "Dominion" and the C.N.R. "Continental" will handle only express, mail, and coach traffic, with sleeping car accommodation in certain local areas. The decision to alter the stock of the "Dominion" and the "Continental" was taken for the purpose of tailoring service to the lower volume of passenger traffic in the off-season period and as part of the continuing effort of the two railways to eliminate duplications and thus effect economies in operation.

## ARGENTINA

### Re-modelling of Railway Facilities

The Government delegate in charge of the State Railways, Eng. Francisco Bustelo Barcia, recently announced that a start has been made with rationalisation and re-modelling of railway access to the cities of Tucumán and Mendoza. New stations are to be built and superfluous track lifted. It is intended to restart work shortly on the Rosario scheme, which had been suspended through lack of funds. The next cities on the programme, he stated, were San Juan, Santa Fé and Mar del Plata, where work was to start as soon as possible. In all cases, a considerable part of the cost would be financed by the sale of surplus land.

### Strike of Signalmen

The signalmen of the Mitre and Sarmiento Railways have insisted on a series of partial strikes and working to rules for some weeks, despite the injunctions of their union and the authorities of the State Railways. The cause of their attitude was the disciplinary measures taken against men who interrupted services through acts of sabotage in the month of May. The Buenos Aires (Roca)

section of the Unión Ferroviaria also decided to stage partial strikes to protest against the official decision to transfer to private interests some of the ancillary services such as refreshment rooms, station cleaning, and so on.

### General Mitre Railway Accident

A collision took place in La Banda Station, General Mitre Railway, when the express "El Tucumano," bound for Buenos Aires from Tucumán, collided with a mixed train from Buenos Aires to Tucumán, presumably due to faulty brakes. One passenger was killed and 12 seriously injured.

## SWITZERLAND

### Lausanne-Ouchy Line

During 1958, the twin lines from Lausanne Flon to the main station of the Swiss Federal Railways and to Ouchy on the Lake of Geneva were converted from rope haulage to electric rack-and-pinion working, and were completely modernised, with new rolling stock, an accelerated service, and new high-capacity lifts at the Flon terminal. The result has been a 23 per cent increase in traffic, and the previous loss, represented by an operating ratio of 105.76 per cent in 1958, has been turned into a profit, receipts during 1959 having totalled Sw. fr. 1,777,280 and expenses fr. 1,644,000, an operating ratio of 92.5 per cent.

### The Middle Thurgau Railway

It is proposed to electrify the Mittelthurgaubahn, at a cost which is expected to be between Sw. Fr. 9,000,000 and 10,000,000. This standard gauge line, 35 miles long, running through prosperous agricultural country in north-east Switzerland, connects Wil, on the Swiss Federal Zurich-St. Gallen main line with Kreuzlingen (for Konstanz), connecting with the

S.F.R. Zurich-Romanshorn main line at Weinfelden, and the Romanshorn-Schaffhausen line at Kreuzlingen.

In 1951 the Mittelthurgaubahn replaced its previous steam power by diesel motor coaches and locomotives, and for the past nine years has depended on diesel traction, though surrounded by Swiss Federal electric traction. In 1959 the line carried 802,902 passengers and 139,838 tons of freight. With the introduction of electric working a more frequent train service is planned.

## WESTERN GERMANY

### Automatic Control of Trains

The first fully automated underground railway in the world, with an electronic brain controlling the arrival and departure of trains, is planned to be in operation in Hamburg by the end of 1962. The equipment will control the whole system, which engineers hope will extend under the entire city. It will stop and start trains, direct them to platforms, and increase and decrease speed as necessary.

## HUNGARY

### New Diesel Locomotives

The Hungarian Railway Carriage & Machine Company, Győr, is now producing new types of diesel locomotives. After a successful trial run of several thousand miles the prototype of a 350 h.p. diesel-hydraulic locomotive has recently been accepted by the Hungarian State Railways. The locomotive can be used both in shunting service and for hauling short goods trains or passenger trains at a maximum speed of 37 m.p.h. An advantage of the locomotive is that it may be operated over secondary lines possessing of weak superstructure. The locomotive will soon be put in series production.

## Publications Received

*Training Boys in Industry: The Non Apprentice.*—London: The Industrial Training Council, 36, Smith Square, S.W.1. Price 1s. 9d.—In this 28-page booklet are set out the general principles of training which the Industrial Training Council believes essential for all boys entering industry. Two thirds of men and boys in industry, it is stated, are in semi-skilled or unskilled occupations, and this proportion is unlikely to change. The vital elements in training are planned practical training in the workplace, and further education. The essential features of practical training are stated to be: first, instruction regarding the firm and industry concerned, their organisation, products, and general economic position and the boy's own job in relation to these; and, second, systematic practical training supplemented by practical experience on the shop floor or in a special training centre at the workplace. As to further education, some semi-skilled jobs demand vocational further education as a complement to practical instruction in the

factory. For other semi-skilled and for unskilled jobs this is thought unlikely to be necessary. The Council believes that the need for transference of workpeople from one job to another will require a mental flexibility which can be developed only by further education after full-time schooling, and that industry would benefit by extending day release facilities for further education up to the age of 18. Examples are given of systematic training arrangements which operate in 16 concerns in a wide range of industries, including the works of Crompton Parkinson (Chelmsford) Limited at Chelmsford, of the English Electric Co. Ltd. at Stafford, and of the Park Gate Iron & Steel Co. Ltd. at Rotherham.

*Eisenbahn-Lexikon (Railway Dictionary).* Compiled by Berthold Stumpf. Mainz and Heidelberg: Verlagsanstalt Hüthig & Dreyer. 8½ in. x 5½ in. 306 pp. Price D.M.15.—Definitions and brief explanations are given in German of some 4,000 terms used on railways and in the manufacture of railway material,

and brief biographical notes are given on men famous in the railway world, such as Robert Stephenson, George Pullman, and, as a more recent example, Julius Dormüller. Some of the entries such as that on *güterwagengattung* (wagon classification) consist of notes on current practice, with reproductions of number and other designations. For those who read German the dictionary is a useful supplement to the International Union of Railways "Lexique Général" and to other dictionaries which give brief definitions rather than explanations.

*Coal: The Price Structure.*—This 10-page handbook, published by the Federation of British Industries, gives the procedures for calculating the price of all the main types and grades of industrial coal with the exception of carbonisation coals, anthracite, and dry steam nuts, which are only referred to briefly. In an appendix a short explanation is given of the rank of coals. Copies, price 2s. 6d., may be obtained from the F.B.I., 21 Tothill Street, London, S.W.1.

## Rational Development of Locomotive Diesels

*The present need in the U.S.S.R. is for a new approach to power-unit design if diesel traction there is to be developed satisfactorily in the future*

**G**ENERALLY locomotive engines have been evolved without sufficient consideration being given to the specific requirements imposed by traction demands. One of the main reasons for this phenomenon was the absence of precisely-formulated operational requirements imposed on diesel engines used for traction purposes. So far there is no unified opinion regarding the choice of engines, this being mainly because of the fact that the main requirement demanded of a locomotive engine—reliability in service—relates not to whether the engine is a two- or four-stroke type but to the state of its development.

Existing two- and four-stroke engines can equally well meet operational requirements as far as output (750 to 4,000 b.h.p.), specific weight (4 to 8 kg. per b.h.p.), and overall sizes are concerned. The four-stroke engine possesses a number of advantages; these are related to lower fuel consumption at part loads and to the smaller sizes and lower weights of the cooling system for both oil and water. The four-stroke engine requires less power to maintain the required air flows. Also the working cycle permits a choice of ratio between the exhaust pressure before the turbo-blower  $p_t$  and the pressure downstream of the blower  $p_b$  which will ensure the best overall efficiency of the power plant. With two-stroke engines these possibilities are limited as it is necessary to meet the requirement  $p_b > p_t$ .

### Small Load Factors

When considering the economics of two- and four-stroke engines it is necessary to remember that 30 to 40 per cent of the running time the locomotive engines are idling, while the average load factor does not exceed 75 to 80 per cent of the full power output. Because of this the specific fuel consumption in operation is determined by the load variations and by the fuel consumption at these loads. The influence of idling and part-load conditions on the efficiency of two-stroke engines results in this being lowered because of the unavoidable use of mechanically-driven blowers to ensure the necessary scavenging. On this account the Russian 2D100 engines which have a low fuel consumption at full load (175 gr. per b.h.p.-hr.) do not record such good results in service as do the 2D50 and D50 engines with a nominally poorer fuel consumption of 185 to 190 gr. per b.h.p.-hr.

In the case of up-to-date main-line locomotive the cooling installation claims some 20 to 25 per cent of the total vehicle length in addition to the use of considerable quantities of non-ferrous metals. Thus with two-unit TE.3 locomotives some 4.6 tons of expensive metals have to be used for the cooling system alone. With four-stroke engines it is possible

to reduce the size and weight of the cooling system because of the reduced amount of heat dealt with by the oil cooler resulting from less heat transferred from the pistons. As the heat-transfer coefficients of oil and water coolers are related in the proportion of 1 to 3, this results in a beneficial reduction in size of the rather sensitive oil coolers.

The advantages thus accrued can be illustrated on the basis of the following example. For equally efficient engines and identical maximum coolant temperatures, the D50 four-stroke engine requires 1.6 cooler sections for every 100 b.h.p. compared with three sections for the 2D100 two-stroke engine.

### Long-Term Plans

Present plans are for the D100 two-stroke engine to be the basic main-line locomotive unit in the U.S.S.R. for the next five to seven years. The Kharkov Transport Machinery Works has achieved considerable success in improving the reliability of this engine while at the same time endeavouring to increase the power output from the present 200 b.h.p. per cylinder to 250 to 300 b.h.p. These achievements permit a modernisation of type TE.1 and TE.3 locomotives by improving their fuel consumption and performance characteristics, but despite this, locomotives of 3,000 to 4,000 b.h.p. will have axleloads of 22 to 23 tons because of increased weight of the equipment including engines, generators, and cooling installation.

For passenger locomotives developing up to 3,000 b.h.p. it is proposed to use 11D45 engines which are somewhat lighter, but even so the weight of the generator and coolers will, in the case of TEP.60 locomotives, result in an axleload of about 21 tons. Because of this it would be wrong to limit production to two-stroke engines only. Considering the advantages shown by four-stroke engines it will be advisable, in addition to improving the performance of two-stroke engines, to direct the efforts of the industry to the development of four-stroke locomotive engines of 3,000 to 4,000 b.h.p. having a specific weight of 4 to 4.5 kg. per b.h.p. and a fuel consumption of 150 to 155 gr. per b.h.p.-hr. Engines of this type could be used for new locomotive types as well as for the modernisation of those which already exist.

### Low Specific Weight Needed

Present day development of locomotive engines is accompanied by increasing the crankshaft speeds to 1,000 to 1,500 r.p.m., this appreciably easing the possibility of producing powerful power plants of small size and low weight. During the last 10 to 15 years the mean piston velocity has been increased to a far lesser extent and, generally, this does not exceed 9 to 10 metres per sec. which

permits engines to be capable of running in service for at least 15,000 hr. between major overhauls.

### Fuel Consumption in Service

The lowest specific fuel consumption at each engine speed of rotation should correspond to the power output required at that speed to match the locomotive characteristic curve, i.e., the economic characteristic of the engine should correspond with that of the locomotive in the greatest possible range of engine speeds. Also the position of the range of lowest specific fuel consumptions with regard to the locomotive characteristic is of considerable importance. The output and r.p.m. at which the fuel consumption should be at its lowest will depend on the demands imposed by the nature of the service. With goods locomotives, the lowest fuel consumption should be within the range of 75 to 100 per cent of the maximum power output as this condition predominates in the operational requirements. With shunting locomotives, the lowest fuel consumption should be further away from the maximum output.

The requirements imposed to achieve the best traction characteristics and economy in operation, depending on the type of service as well as the type of transmission used, demand a rational matching of the power output and fuel-consumption characteristics as well as the simultaneous control of engine and transmission. These demands relate to the classic pattern of diesel engines which maintain a practically constant torque over the entire engine speed range. Present-day locomotive diesel engines which combine the use of the gas turbine (turboblower) for pressure-charging have made it possible to alter the engine characteristic towards the requirements imposed by traction considerations. To achieve this it will be necessary to ensure a torque characteristic rising with reduced speed. Even a partial solution of this task will permit a worth-while simplification of the transmission.

### Twelve Engine Designs

Already the number of designs of Soviet-built rail-traction diesel engines is no less than six; allowing for imported designs the total is 12. Because of this the question of standardisation is gaining in importance.

The advantages of standardisation in terms of increased production facilities and reduced first costs are well known. No less important are the advantages secured in terms of operation and maintenance. Locomotive sheds have, as a rule, to look after a number of locomotive types using different makes of diesel engine, carrying out running maintenance and replacement of worn parts. The quantity of engine parts varies between 1,320 for D50 engines to 1,770 for 2D100 engines. The quantity of spare



parts usually supplied to sheds varies between 200 and 285 of various items. This gives some indication of the stocks of spares needed for every engine type maintained at each shed, to which must be added any necessary special tools and fixtures. In all, the running maintenance of diesel engines in the U.S.S.R. claims 40 to 85 per cent of the total locomotive maintenance expenses.

#### Industry Hesitant

It follows from the above that a reduction in the number of different engine types should reduce the variety, numbers, and cost of spare parts, and the number of rigs and tools required, and it will also improve the quality of maintenance—at reduced expenses. Despite these facts the industry is hesitant in pursuing the standardisation of engines.

The leading data relating to locomotive engines in the U.S.S.R. is summarised in Table 1. It will be noted that type D100 engines have been developed to cover an output range of 2,000 to 3,000

range of 400 to 1,200 b.h.p. could be dealt with by two instead of three basic types. It might even be desirable to broaden the task by evolving similar engines to deal with 750 to 4,000 b.h.p.

For an output of 400 to 1,200 b.h.p. the M. 751 engine appears as the most suitable one, provided that certain shortcomings are eliminated. These include the fact that the economic characteristic is advantageous only for locomotives running at low operational speeds with torque-converter transmission. Also the location of the range of lowest specific fuel consumption at low engine speeds and power outputs cannot be regarded as acceptable.

The main tasks required to improve the M. 751 engine design will demand turbocharging, increased output per cylinder, increased efficiency, use medium-viscosity lubricating oils, elimination of limitations imposed on idling, and increasing the reliability and the durability potential.

The power output of 1,000 to 4,000

hrs. In addition it is inexpensive in maintenance. As far as its weight and space requirements are concerned it does not meet present day or future requirements.

#### Excessive Engine Height

The introduction of type 2D100 engines with locomotives resulted in appreciable improvements of the design which gave improved reliability; but there are definite difficulties opposing the acceptance of this engine as a basic type. For instance, its great height prevents its use with locomotives which must meet international loading-gauge requirements. Other difficulties are high specific weight (including cooling installation and generator), complicated design and resultant increase of maintenance expense mainly because of sub-divided crankshaft installation and the large number of bearings and pistons, and the unreliable performance of the individual assemblies.

#### New Designs Needed

Taking all aspects of the matter into account, it is considered in the U.S.S.R. that it is essential to evolve a new engine type capable of developing 750 to 4,000 b.h.p., based on the already-accumulated experience and capable of meeting future requirements. The most suitable model for this appears to be the four-stroke Ch.N.24/27 running at 1,000 r.p.m. and the two-stroke D45.

Thus for forthcoming requirements the U.S.S.R. is faced with the choice of Soviet engines, the main particulars of which are given in Table 2, and it is thought desirable to entrust the industry with the development of these engines, including type 11D45, to reduce as soon as possible the prevailing multiplicity of types.

This account is based on an article by A. I. Volodin in *Shelesnodoroshni Transport*, July, 1960.

TABLE 1

	ENGINE TYPE						
	2D100	9D100	11D45	D50	2D50	M.751	1D12
Maximum output, b.h.p. ...	2,000	3,000	2,700	1,000	1,200	750	400
Cylinder bore, mm. ...	207	207	230	318	318	180	150
Stroke, mm. ...	2 x 254	2 x 254	300/304.3	330	330	200/209.8	180
No. of cylinders ...	10	12	16	6	6	12	12
Maximum r.p.m. ...	850	850	750	740	740	1,400	1,600
Minimum r.p.m. ...	400	400	400	275	275	600-800	500
Length without generator, mm. ...	—	—	4,348	—	—	2,420	1,852
Length with generator, mm. ...	6,350	6,590	—	5,069	5,069	—	—
Width, mm. ...	1,420	1,500	1,794	1,467	1,467	1,205	1,085
Height, mm. ...	3,240	3,155	2,578	2,478	2,478	1,203	1,043
Specific weight, kg. per b.h.p. ...	9.9	7.8	4.9	16.3	13.6	2.13	4.5
Fuel consumption, gr. per b.h.p.-hr. ...	175	169	175	185	182	185	180

b.h.p. and that it is possible to increase the output up to 3,600 b.h.p. Engines of the D50 type can develop 1,000 to 1,200 b.h.p. with turbocharging. Modern development of engines of the same basic type permit a power range of 1 to 5 and even 6 by altering the number of cylinders, the charge pressure, and cooling of the charge air.

In the circumstances it is incomprehensible why use had to be made of the 1D12 400 b.h.p. 12-cylinder engine while, on the basis of the M. 751 engine, it was possible to have a six-cylinder engine of identical output but with a different characteristic. It is also unjustifiable to have two basic types to deal with 750 and 1,000 to 1,200 b.h.p. while the

b.h.p. also should be met by one common engine type. At present the only operationally-proven types in the U.S.S.R. are D50 and 2D100. The D50 type has proved to be the more reliable one and its durability potential exceeds 20,000

TABLE 2

	ENGINE TYPE										
	D100			Ch.N.24/27					Ch.N.18/20 (M.750)		
Max. output, b.h.p. ...	2,000	3,000	3,600	750	1,200	1,200	3,000	3,600	400	750	1,200
No. of cylinders ...	8	10	12	6	6-8	12	16	4,000	6	12	12
Dry weight, tons ...	16.5	19.8	23.4	6	7	10	13	13.5	2.8	4.5	4.5
Specific fuel consumption at max. output, gr. per b.h.p.-hr. ...	160			150					160		

The weights for engines Ch. N.24/27 and 18/20 are estimates, in the latter case for cast iron blocks and crankcase

**LATE TRAIN FOR FESTIVAL VISITORS.**—To enable visitors to travel to the Edinburgh Festival from Falkirk, Larbert and Stirling, the Scottish Region of British Railways is operating a special late return train on Saturday nights. This train, which will continue to run on September 3 and 10, leaves Edinburgh Princes Street, at 11.22 p.m. and arrives at Falkirk Grahamston at 11.54 p.m., Larbert 12.2 a.m., and Stirling 12.15 a.m.

**MAILBAGS STOLEN FROM SOUTHERN REGION TRAIN.**—Five mailbags were stolen from the 10.32 p.m. train from Dartford to Charing Cross, British Railways, Southern Region, on August 25. The guard saw smoke pouring out of the windows of one of the front compartments as the train passed Slade Green Junction. He brought the train to a halt outside Barnehurst and ran up the line

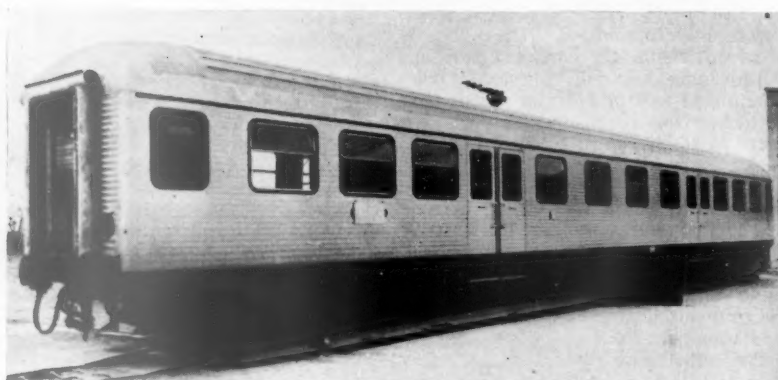
to put out the fire, but found that it was only a smouldering cushion set up as a diversion. While he was away from his van, the bags were removed.

**GOODS AND PASSENGER VEHICLE LICENSING.**—The following Regulations of the Ministry of Transport came into force on September 1: The Goods Vehicles (Licences & Prohibitions) Regulations, 1960 (S.I. 1960, No. 1505); the Public Service Vehicles (Licences & Certificates) (Amendment) Regulations, 1960 (S.I. 1960, No. 1504); the Public Service Vehicles (Contract Carriage Records) Regulations, 1960 (S.I. 1960, No. 1503); and the Public Service Vehicles (Particulars of Interests) Regulations, 1960 (S.I. 1960, No. 1506). The new goods vehicle regulations consolidate the Goods Vehicles (Licences & Prohibitions) Regulations, 1952, as

amended, which governed procedure on the grant and variation of carriers' licences for vehicles and appeals concerning them. The new Regulations make no change of substance in procedure, but merely include such verbal amendments as are required because of the consolidation of the Road & Rail Traffic Act, 1933, as amended, into the Road Traffic Act, 1960. The three Public Service Vehicles Regulations bring up to date the Public Service Vehicles (Licences & Certificates) Regulations, 1952; the Public Service Vehicles (Contract Carriage Records) Regulations, 1951; and the Public Service Vehicles (Particulars of Interests) Regulations, 1934. They make minor verbal amendments to the existing provisions in consequence of the consolidation of the Road Traffic Acts, 1930 to 1956 into the Road Traffic Act, 1960.

## Lightweight Coaches for Suburban Traffic

*Four new designs for German Federal Railway, of great length, in steel and aluminium*



*General view of a W.M.D. lightweight coach*

**T**O reduce power requirements of suburban trains hauled by locomotives, whether electric, steam or diesel, the German Federal Railway some time ago placed orders with four makers for a total of a dozen prototype lightweight bogie coaches of great length, and examples of all four makes are now in service.

Though all these coaches are based in overall dimensions and in bogies and standard fittings on the standard all-steel 26.4 metre passenger carriage, the makers had a free hand in materials and in the principles and details of structural design of the body and framing. All adopted light alloys in some degree or other, but with large variations in the amount used. In the end, the lightest coach was 17 per cent lighter than the heaviest; and the lightest body structure was 67 per cent of the weight of the heaviest.

### Four Types

Of the makers concerned, MaK adopted steel underframes, steel body frames, and steel panel and roof plates for two coaches; for a third coach it used steel body and underframing and Nirosta plates; and for the fourth carriage steel body and underframing and aluminium alloy plates. In the two vehicles built by Hansa Waggonbau the underframe, including headstocks, is of steel and the body framing and all plates of light alloy. Wegmann's two coaches have steel body and underframing and light-alloy plates, but in an endeavour to save money in materials cost, a lower grade steel, St.37, is used, compared with the St.52 in the MaK and Hansa vehicles. The fourth manufacturer, W.M.D., used aluminium alloys throughout, for underframing, body framing and all plates. A précis of these different constructions and the ensuing weights is given in Table I, to which has been added a column giving data on the standard all-steel 26.4 m. passenger coach.

In all four prototype lightweight designs there are seats for 100 second class pas-

sengers at a spacing suited to short-distance travel, though other seating arrangements have been worked out for some coaches. Length over buffers is 26.4 metres (86.5 ft.) and length of the body between end plates 25.1 m. (82.25 ft.); actually the body sides project a little beyond the end plates. Width over outside panels is 2.825 m. (9.25 ft.). Bogie wheelbase is 2.5 m. (8 ft. 2 in.), wheel dia. 950 mm. (37.5 in.), and bogie pivot pitch 19 m. (62.25 ft.).

The seating, entrance-and-exit facilities, and standard of insulation are the same in all the vehicles, and the DB standard rubber-bolster vestibule and roller-shutter vestibule doors are also common

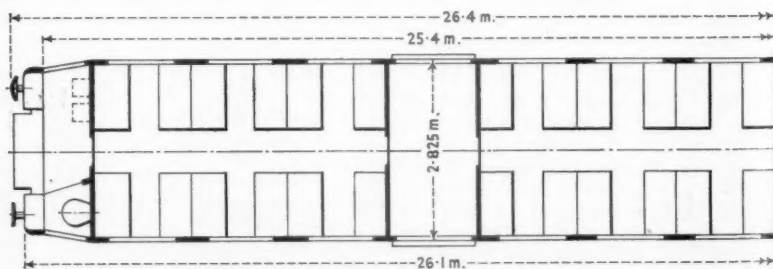
to the four types of car described above.

In the MaK coaches the designed end buffing load is 200 tons. The underframe comprises four longitudinals with substantial bolsters and other lighter crossmembers. In the coach with light-metal sheets the side and end sheet thickness is 2 mm. and roof plate thickness 1.5 mm., whereas in the two steel-plated cars and the Nirosta-plated car the thicknesses are 1.5 mm. for the sides and 1.25 mm. for the roof, except that the Nirosta roof plate is only 1.0 mm.

### Combined Steel and Aluminium Type

The Hansa design makes use of St.52 steel for the underframe, but the body framing and panelling are of Al-Mg-Si alloy, with assembly by riveting and by inert gas welding. Some of the light-alloy sections used for the body framing are shown in an accompanying illustration. Weight of the bare body structure is equal to about 238 kg. per m. (160 lb. per ft.); and weight saving in this structure compared with an all-steel design has been said by the designer to be about 3.5 tons. Because of reasoning similar to that put forward by Sir Alfred Pugsley in the recent symposium on light-alloy rolling stock, the necessary end buffing load for these coaches was considered by the designer to be sufficient at 70 tons.

With the Donauwörth (W.M.D.) design the use of light alloys for the underframing as well as the body framing,



*Plan of half of aluminium-alloy coach for short-distance traffic*

*Aluminium-alloy profiles used in two makes of German suburban coaches*

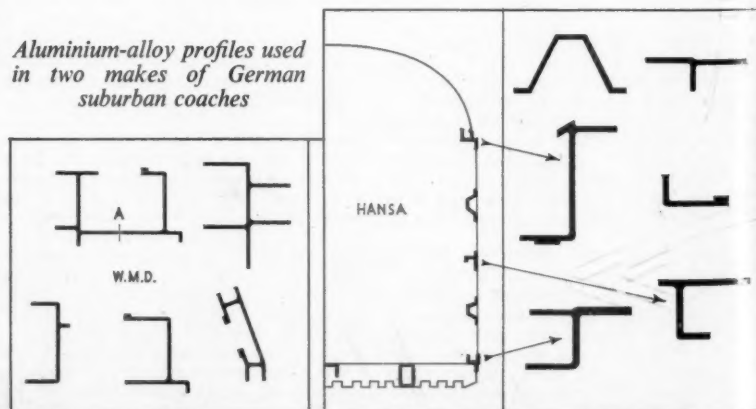




TABLE I—GERMAN LIGHTWEIGHT SUBURBAN COACH DATA

	MaK	Hansa	W.M.D.	Wegmann	Std. Steel Coach
No. of coaches ... ..	4	2	4	2	several hundreds
Underframe portion ... ..	Steel	Steel	Al. Alloy	Steel	Steel
Body framing ... ..	Steel	Al. Alloy	Al. Alloy	Steel	Steel
Body panels, roof ... ..	Steel (2) Nirosta (1) Al. Alloy (1)	Al. Alloy	Al. Alloy	Al. Alloy	Steel
Empty weight of carriage, tonnes ...	27.5 (2) 27.3 (1) 26.5 (1)	27.2	25.2 (1) 24.7 (3)	29.8 28.8	34
Car Body structure incl. panels, tonnes	6.5 (2) 6.3 (1) 5.5 (1)	6.2	5.5 (1)* 5.0 (3)†	7.5	
Car body length, metres (ft.) ...	26.1 (85.5)	26.1 (85.5)	26.1 (85.5)	26.1 (85.5)	26.1 (85.5)
Stress-bearing car body length, metres (ft.)	25.1 (82.25)	25.1 (82.25)	25.1 (82.25)	25.1 (82.25)	25.1 (82.25)

\*With 3-mm. side panels

†With slightly thinner panels and body sash-lings

and the combination of the two into an integral design, has enabled the total coach weight to be reduced to 24.7 metric tons, and a total weight of 4,780 kg. (10,725 lb.) of Al-Mg-Si alloy has been incorporated, and the assembly method comprises inert gas welding, spot welding, and riveting. Probably this is the first example of a railway carriage framing of anything like 25 m. (82 ft.) length being constructed entirely in aluminium alloys. The underframe portion has two outer longitudinals, dipped and well strengthened at the entrance doors, but has no inner longitudinals behind the buffers or drawgear. However, there are strong bolsters and headstocks, and numerous smaller cross-stretchers. The main longitudinals are of open and flanged box section, welded at the point marked A in the accompanying section; thicknesses of this member vary from 5 to 7 mm.; at the bottom the overall width is 434 mm. (17.1 in.), and the depth is 228 to 264 mm. (9 in. to 10.4 in.).

#### Attempt at Economical Build

Thicker light-alloy plates than in other cars are used in the Wegmann coaches, 2.5 mm. for the sides and ends and 2.0 mm. for the roof, because of the difference

in steel quality of the framing; the 1.0 mm. corrugated floor plate is in St.37 steel. The car weight of 29.8 metric tons given in Table I can be reduced by one ton if lighter inside panelling and details are provided. A new type of double swing door, with side hinges, and giving a clear 1.4 m. (4 ft. 7 in.) opening with centre grab pillar, is being

tried on these two coaches. Also wheels of 750 mm. (30 in.) dia. are being used instead of the standard 950 mm. (37.5 in.), and the height of the floor above rail has thereby been reduced to 900 mm. (35.5 in.) from 1,175 mm. (46.4 in.) in the standard steel coach, and floor level thus is below the standard buffer height which is 1,060 mm. (41.8 in.) above rail level.

## Steam Working in the U.S.S.R.

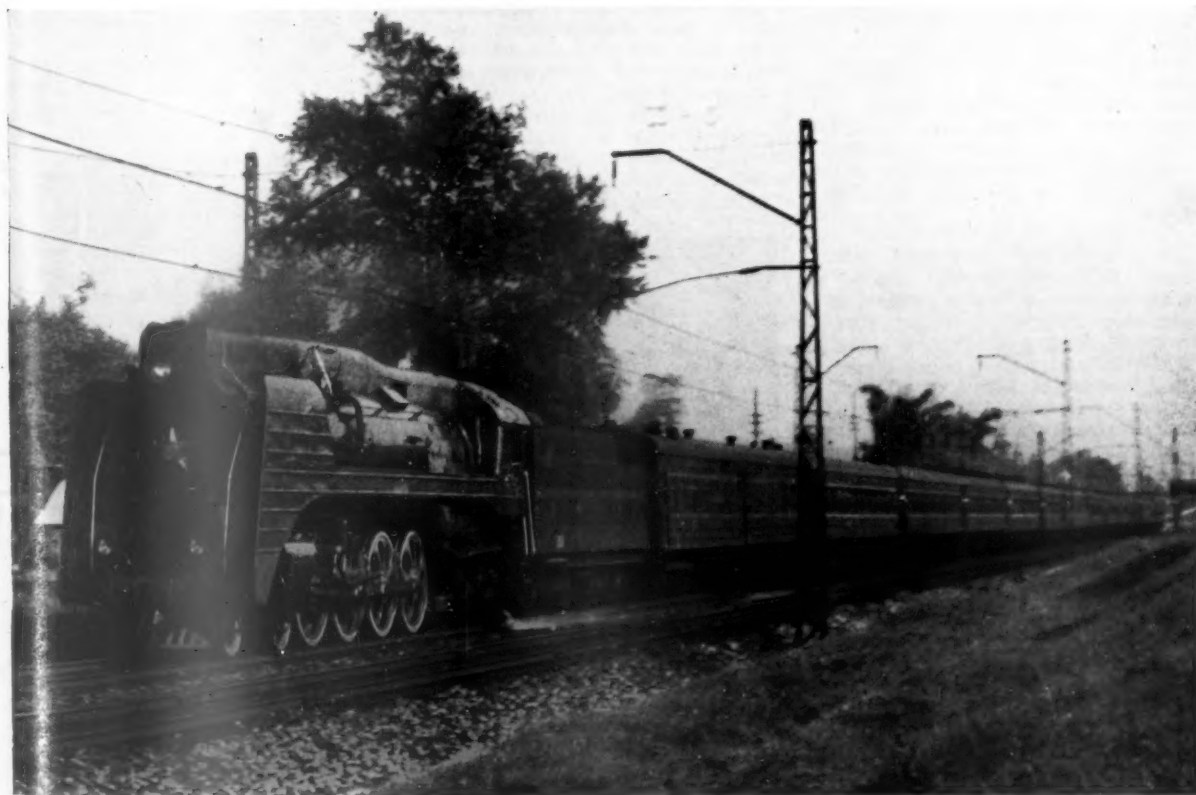


Photo.]

[J. O. Slezak

Moscow-Leningrad express hauled by Class "P36" 4-8-4 locomotive in Moscow area, showing equipment for electric suburban operation (see editorial comment in our August 12 issue)

## Selling Railway Services in the North Eastern Region

*Specialist railway salesmen, backed up by highly-organised staffs, use considerable measure of delegated authority to gain more traffic*

By W. H. Vine, M.Inst.T., M.S.M.A.

Commercial Officer, North Eastern Region,  
British Railways, York

**P**REVIOUS articles published this year have presented a picture of the North Eastern Region as it will be when the vast jig-saw puzzle of the Modernisation Plan is complete. In this article, I am dealing with what goes on until all the pieces are laboriously fitted together, and the new-style North Eastern Region can be seen and appreciated by those outside the industry.

The railway machine has to be kept working and fed with traffic even while pieces are still missing. The fact that pieces are missing is only of passing interest to the average man or woman in the street. The housewife is not concerned about how the separate parts of her vacuum cleaner are made, but only in how successfully her appliance cleans; so the public will judge the North Eastern Region's service only by results—by its value to them in terms of pounds, shillings, pence — and convenience.

### Good Foundation

Each stage of progress represents a layer of improvement on something which was already quite good. There is too great a tendency to talk as though railways are approaching the Millennium from a background of nothingness; this idea must be dispelled. Even before this Region pioneered the new developments it was a system highly efficient within the compass of the available tools and layout.

The Region can be likened to an orchestra which the management intends to build to first-class standard, conducting it through some *pianissimo* passages, but only as a preliminary to the present *crescendo*, leading to the *fortissimo* a little way ahead.

In practice, we have to sell our service each and every day at the level of performance available at the time, but sell we must, especially in terms of freight. This is not to deny the importance of the ordinary passenger even if, unless a business man or a commuter, he uses the railway perhaps only once a year as a holidaymaker or for occasional outings. He has at least one attribute for which we should be very thankful; he loads and unloads himself, and looks after his own collection and delivery!

To keep in touch with the passenger, we use press advertising, posters, and pamphlets, and build up our public relations in many other ways to ensure that the physical presence of railways in our midst is not the only reminder of our wares.

For party and excursion traffic we go further and attach sales staff to each District Officer, with the task of maintaining liaison with likely group travel

organisers, and interesting them in travel for education, sport, and so on. The salesman here is a creator; without his efforts the traffic might not exist.

### Road Competition

The best of passengers do not use railway service continuously like the constant forwarder of freight flowing between many different points and for myriad purposes. In general, freight business does not have to be created, it exists—but so do many competitors. Air and sea are among them, but the main opponent is throughout road conveyance, and this one is hydra-headed.

There are, for instance, the "A" licensed carriers (the professionals), the "B" licensed carriers (a mixed breed), and, the greatest of all, the "C" licensed operators. On the fringe, too, is the opposition of units working on both "A" and "C" contracts.

To combat all these, an intensive freight sales policy is essential and, linked to this, a keen marketing sense. Transport policy now sometimes rests with the Board Room and not, as often in the past, with the transport manager or dispatch clerk. Every railwayman is a salesman at heart, but today's specialisation calls for specialised salesmen trained to work in a modern setting.

Selling railways in the past always devolved on the District Officer responsible for commercial affairs, but the regu-

lar contact necessary was carried on by a staff of commercial representatives under the direct supervision of a chief representative.

This is still so on the passenger side in regard to excursions and party travel which, for reasons explained earlier, need different techniques. For freight, comprising general merchandise, minerals, fuel, and other specialised traffics, the need for intensified liaison, coupled with approach at the highest level, was becoming increasingly evident.

The first change was to attach prime responsibility for sales to the District Commercial Officer's principal assistant. The second was to group the representatives strategically within each district to make spearhead forces with knowledge of local industries. The third was to introduce "field" Sales Assistants controlling the main representatives, and reporting to the principal Assistant.

### Area Management

While this reorganisation was shaping, area management by Traffic Managers was introduced. The North Eastern Region is divided in four areas, each under the control of a Traffic Manager. These areas are formed from the following four natural industrial compartments:—

Area	Centre
West Riding Tyne & Wear Tees-side Hull/York	Leeds Newcastle Middlesbrough Hull and York

In each area, District Officers guide the daily work of the area for commercial, operating, and motive power purposes. Those particularly dealing with the commercial side vary in designation and division of responsibility according to local circumstances, as shown below.

Office	District Designation
Leeds	Goods Superintendent Passenger Superintendent
Newcastle	Goods Superintendent Passenger Superintendent
Middlesbrough	Commercial Superintendent
Hull York	Traffic Superintendent Traffic Superintendent

These District Officers have duties beyond pure selling (traffic accounts, goods depot terminal working, cartage, are examples—apart from operating tasks devolving on the District Traffic Superintendents) but they face the public and act in their own name in all relations with the railway's customers.



Cover of booklet issued for the guidance of North Eastern sales staff

It followed from the changes in sales organisation, taken together with the new form of area traffic management, that there has evolved a modern concept of selling with a revised version of the sales force.

### Sales Promotion

Freight business of all types is the mainstay of the Region, which ranks second among all the Regions of British Railways for total tonnage of originating freight. To illustrate the freight sales plan at work let us look at the West Riding.

The plan has the following essentials:—

1. the maintenance of public goodwill;
2. a watch on successful care of existing business;
3. provision of intelligence reports on prospective new business;
4. surveillance of the competition;
5. market surveys to establish what the public wants.

The West Riding Traffic Manager, supported by the District Goods Superintendent and by his Assistant (Sales) cover highest level contacts with large existing or potential accounts, as well as other contacts where important developments are in the offing or complex problems must be solved. The Assistant also, besides his direct custody of selling practice, covers ancillary subjects such as traffic accountancy and warehouse distribution. Answerable to him are three senior salesmen who control three geographical areas as well as a speciality branch (at Bradford) dealing with wool, the staple industry of the West Riding. They are also responsible, on behalf of the District Passenger Superintendent for canvassing in certain areas for parcels by passenger train.

### High-Level Representation

These senior salesmen again are responsible currently and continuously for high-level representation plus the supervision of the total of 24 salesmen in the field. Their care is that each man selling is:—

- i. kept fully versed in standard facilities and new "lines";
- ii. maintaining a full cover of every customer, large and small;
- iii. encouraged and works with enthusiasm, supported by the main organisation;
- iv. alert to each opportunity as a reporter for further action and as an order-taker.
- v. able to keep a finger on the pulse of the opposition.

The work is onerous—the sales staff at all levels are originally selected most carefully to gain men of knowledge yet with a flair for "putting across a case." On their entry into the selling side they are given a short general training in the detailed requirements of the venture on which they are embarking. Each new salesman receives a copy of a booklet published by the North Eastern Region and entitled: "How Not to Hide our Light under a Bushel." This incorporates both general and detailed selling advice.

This course is necessary particularly in regard to freight which, by its very nature, varies in its requirements with almost every consignment. Differing pairs of points, quantities, and delivery requirements are only some of the diversities. The salesmen must be prepared to deal with all these things and beyond this know the many types of rolling-stock available, the port facilities throughout the country, acceptance of bills-of-lading, the attraction of warehouse distribution schemes, and so on.

### Prompt Quotations

The railway salesman has to be a "go-between" and with every new venture the question of price soon looms. Here, all the salesmen are supported by the streamlined freight-rate-making policy described in a preceding article. There is no traffic offering nowadays which the North Eastern Region seeks to carry (and some traffic is *not* wanted if the carrying rate is uneconomic) but for which either a conventional individual rate can be immediately quoted or a novel and more comprehensive form of charging produced for extensive blocks of traffic.

The North Eastern salesmen are enthusiastic and optimistic (as they should be for the pessimist is no longer qualified to be a salesman) but undoubtedly success has contributed to this confidence.

Altogether in the Region, below the level of the Assistant (Sales) District Superintendent, there is a sales force of 87 covering all business by goods and passenger train. On the freight side, the number of contacts is very large—traders with credit accounts alone (that is, excluding the numerous small or casual customers) are in the tens of thousands.

To service all this sales staff there is a constant flow of information from York Headquarters via the Commercial Officer who arranges for the supply of specialised

functional advice and acts as a channel for disseminating new ideas and facilities as well as sales policy decisions of the Assistant General Manager (Traffic).

In this, apart from the general flow of sectional information, the actual technique of selling is taken care of by his sales assistant, who has to "feed," through the area management, the spirit of merchandising.

### Periodic Sales Meetings

This is done by periodic sales meetings, the arranging of talks and exhibitions, and by the issue of regular Sales Bulletins. These not only describe the specific sale but give general tips on selling as a speciality, and are designed to provoke thought and discussion. The keynote of these bulletins is best demonstrated by quoting an extract from one of them:

"The customer's needs are simple. He requires his goods to be transported quickly, cheaply, and without damage. Nevertheless, there is no easy way or magic formula for securing traffic to rail or, for that matter, for meeting the ever-present threat of diversion to other forms of transport. Each proposal for new business must be carefully and promptly examined from all angles in relation to the facilities we can afford, the rate we can offer and the service we can provide, plus that little extra which will enable us to match and even surpass our competitors. At the same time we must see to it that standards are maintained, and where diversion is threatened no effort should be spared to ascertain the cause and apply the appropriate remedy."

Expert advice to the areas is also provided by specialists on the two important phases of present-day industrial development—the bulk conveyance of liquids and solids, including container movement.

### Continual Drive

The drive is on continually to remind that failure is the line of least persistence. Those facing the public know that the product they sell is getting better and better, and that some interim difficulties inescapable in the execution of any great modernisation plan are only stepping stones to the ultimate perfection. The proof of the growing tide of success of the North Eastern Region's sales campaign is already available for all to see—it lies in the mounting traffic figures.

**CORROSION & METAL FINISHING EXHIBITION.**—Sir Alexander Fleck, President of the Society of Chemical Industry, will open the Corrosion & Metal Finishing Exhibition to be held in the Empire Hall, Olympia, London, from November 29 to December 2. The exhibition is at least twice as big as the first Corrosion Exhibition, held in 1957, and is now probably the world's largest display of metal finishing products, and services. One of the new features of this year's exhibition will be technical meetings arranged by the Plastics Institute, and by the Corrosion Group of the Society of Chemical Industry.

At the exhibition there will also be technical films dealing with various aspects of corrosion, and metal finishing.

**ELECTRICAL HEATING DEMONSTRATIONS AT FACTORY EQUIPMENT EXHIBITION.**—Three main methods of using electricity for heating works premises will be displayed by the Electrical Development Association at the Factory Equipment Exhibition at Manchester on September 21—October 1. These are space heating by floor warming and block-storage heating, and the provision of localised warmth by infra-red heating. Block-

storage heaters consist of an assembly of blocks of concrete incorporating electric heating wires. The whole assembly is encased in sheet metal. Economy is gained by the block being heated during the night at the off-peak rate; the heat is given out steadily during the day following.

**BRITISH STANDARD FOR IDENTIFICATION OF PIPELINES.**—A new British Standard publication, BS.1710: 1960, Identification of Pipelines, recommends an identification colour code for pipelines in buildings, industrial installations, and on water and land transport.



## Diesel Locomotives for East African Railways

*High performance on gradients and low axleload are features of English Electric 1Co-Co1 units with charge-cooled engines*

**DELIVERIES** are in progress of 10 English Electric main-line diesel-electric locomotives to the East African Railways & Harbours Administration. These "90" Class metre-gauge locomotives are being built at the works of Robert Stephenson and Hawthorns Limited, which is a member of the English Electric Group.

A considerable amount of route survey and design investigation was undertaken in determining a locomotive specification to meet the operating requirements of this difficult territory. The main routes to be covered, hauling heavy passenger and freight trains, are between Mombasa and Nairobi, and Nairobi and Kampula.

### Gradients of 1 in 45

Gradients on certain sections are as much as 1 in 45 and altitudes range from sea level to 9,000 ft. The main line is laid with 80-lb. rail, but to meet the limitations of branch lines laid with rails under that weight the maximum axleload is limited to 13½ tons. Further require-

ments of this exacting specification were that the locomotives should be readily convertible from the present metre gauge to 3-ft. 6-in. gauge, and also that vacuum-braked stock could be hauled if required. Air brakes are fitted to existing stock.

The problem of low axleload for the light track combined with good adhesion characteristics for starting has been solved by using the 1Co-Co1 axle arrangement. Use of the pony truck largely eliminates weight transfer and enables a high driving torque to be used without slip. It is claimed that this bogie design shows a low rate of wheel flange wear on sharply curved track.

Power is supplied by an English Electric 12-cylinder direct-injection diesel engine, type 12 CSVT. Maintenance of the high power output of this engine under the adverse tropical and high-altitude conditions is achieved by turbo-charging and charge cooling. On certain routes, where the extreme altitudes are not encountered, the maximum power may be increased by the setting of a calibrated adjustment, thus ensuring

optimum performance under any site conditions.

Provision is made for multiple-unit operation, and, as an illustration of the performance, a double-headed unit is capable of hauling a 1,400-ton train up a 1 in 66 gradient at a speed exceeding 15 m.p.h.

A further important factor contributing to the train performance is the high-capacity dynamic brake, which allows faster descent of the down grades with no danger of brake fade.

### Automatic Vigilance Control

In addition to the normal range of power equipment, safety devices, and deadman's cut-out, the locomotive is also fitted with the Davies & Metcalfe Automatic Vigilance Control System. Driven from the axle and operating on a distance-run basis, this device rings a warning bell when the locomotive has travelled a pre-set distance. If no action is taken by the driver within a short period to cancel this signal the power is cut off and the brakes applied.

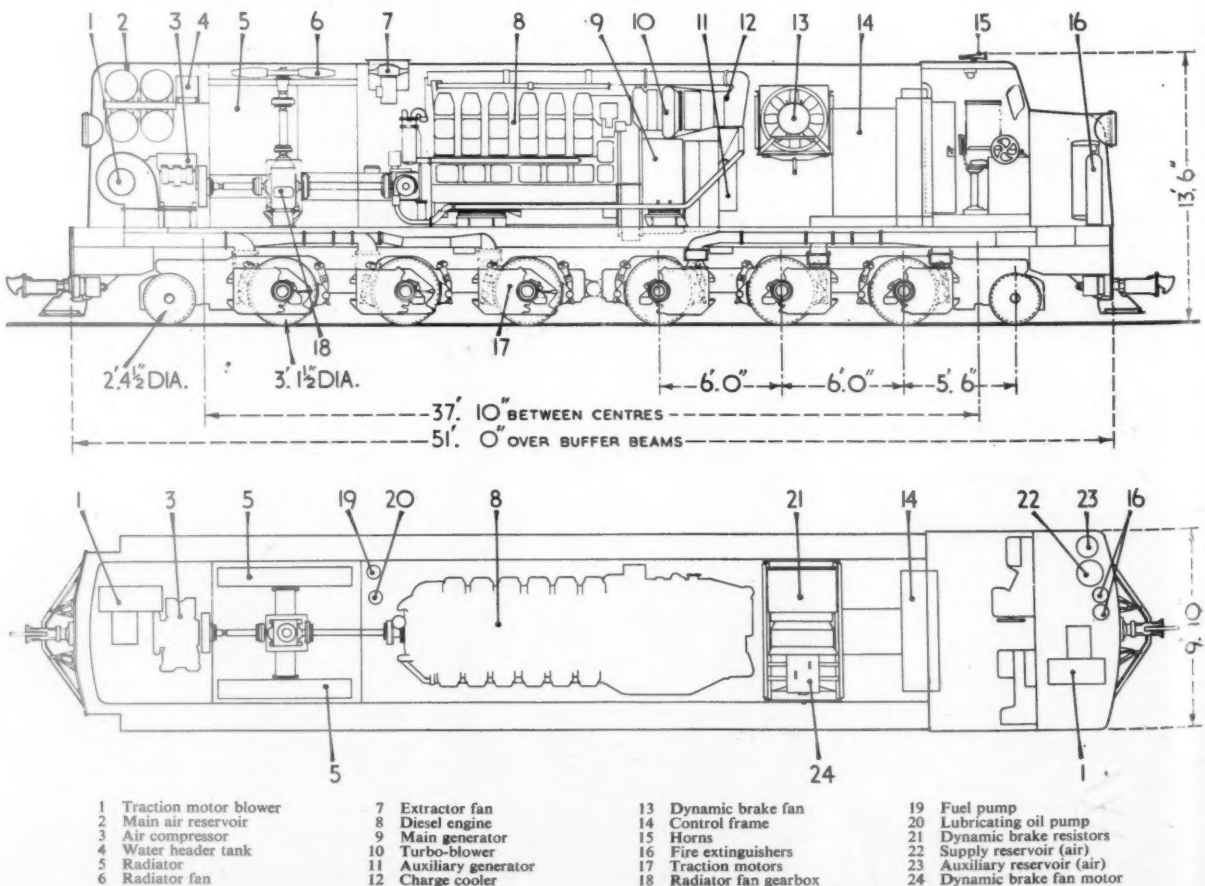


Diagram of the locomotive showing principal dimensions

The spacious driving cab, with a compact control desk of the knee-hole type and fully adjustable upholstered seat at each side, is well arranged for good visibility and driving efficiency. The normal driving position is on the right, with mechanical coupling to the left-hand-side controls. At the left the driving seat is positioned to give maximum visibility when driving with the bonnet leading. Trico screen washers and screen wipers are installed. Instruments and gauges are carried on a vertical panel forward of the controls.

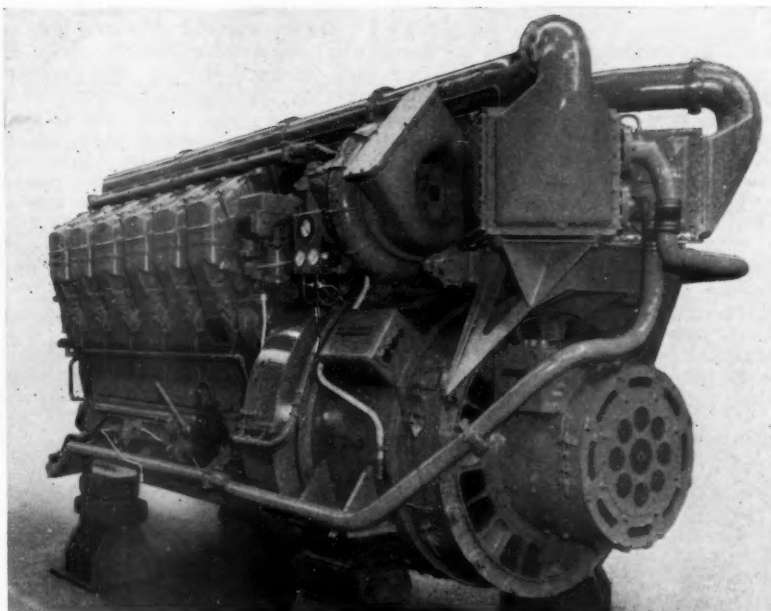
The handle of the power controller also operates the dynamic brake. A self-lapping air valve is used to transmit the power control settings to the engine governor, which in turn controls the main-generator field regulator. The engine speed is continuously variable from idling to full rated speed, and when the driver has set the power output to suit traffic requirements the generator loading is automatically adjusted and held to this value.

#### Leading particulars are as follow:

Wheel arrangement ... ..	1Co-Co1
Maximum service speed ... ..	45 m.p.h.
Maximum starting tractive effort ... ..	57,000 lbs.
Continuous rated tractive effort ... ..	44,500 lbs.
Weight in working order ... ..	97½ tons
Axleload-driving axles ... ..	12·8 tons
Axleload-guiding axles ... ..	10·3 tons
Fuel capacity ... ..	1,000 gal.
Gauge ... 1 metre—convertible to 3 ft. 6 in.	
Length over headstocks ... ..	51 0
Maximum width ... ..	9 10
Maximum height ... ..	13 6
Rigid wheelbase ... ..	12 0
Bogie centres ... ..	37 10
Wheel dia.—driving axles ... ..	3 14
Wheel dia.—guiding axles ... ..	2 4½

#### Superstructure

The superstructure is of the bonnet type, with a single full-width driving cab at one end. Ahead of the cab is a nose compartment which gives a good front-end styling and is used to house one traction-motor blower, auxiliary air reservoirs, and fire extinguishers. The rear bulkhead of the cab is formed by a cubicle containing the electrical control equipment. This is a tee-shaped unit with sectional hinged doors for access



Power unit similar to that installed in locomotives for East African Railways showing 12 CSVT engine, generators, and charge coolers

from the cab side and a large louvred door at each side of the bonnet.

The power equipment, carried on resilient mountings, is installed with the generator at the cab end. Mounted transversely between the generator and the electrical cubicle is the dynamic brake resistor unit and resistor cooling fan.

The engine cooling group, made up of side-panel radiators and roof-mounted fan, is enclosed in a sealed compartment at the free end of the engine. At the front end of the bonnet are the main air reservoirs, radiator header tank, traction-motor blower, and air compressor.

The cab and nose compartment is a steel-frame structure with double-skin insulated roof and a projecting sun visor on the outside over the driving screens. There are full-drop lights

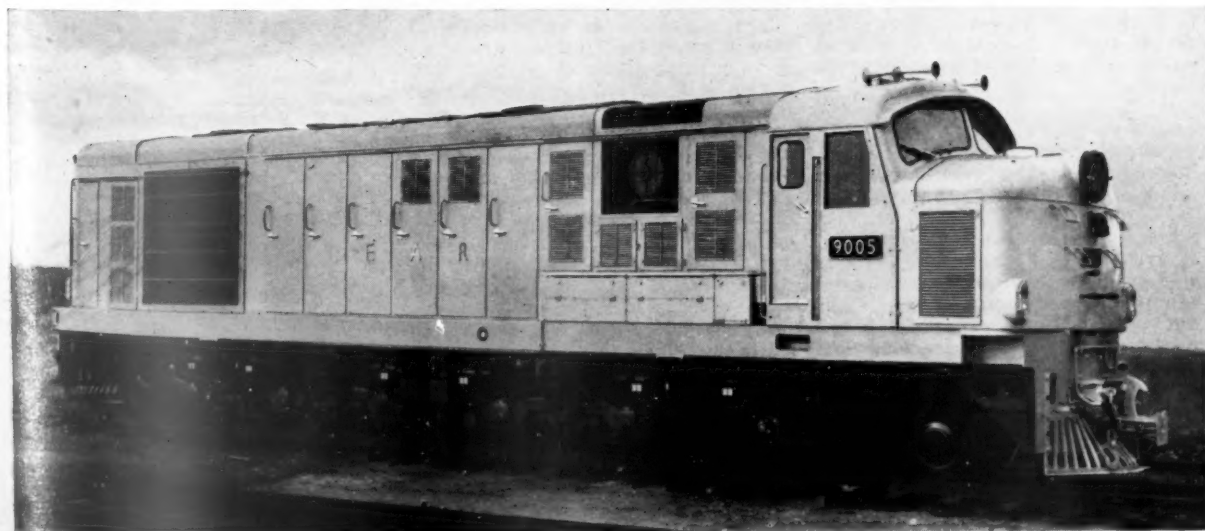
alongside each driving position and a fixed light in each cab door.

The bonnet sides are made up of a series of cast-aluminium hinged removable doors with louvred air-intake panels. Hinged aluminium covers are in the bonnet roof above the power equipment.

#### Site Ratings

The site ratings of the power unit at 850 r.p.m. are 1,840 b.h.p. up to 5,500 ft.; 1,800 b.h.p. up to 7,800 ft.; and 1,775 b.h.p. up to 9,136 ft. This 12-cylinder vee engine, of 10 in. bore and 12 in. stroke, has a continuous traction n.t.p. rating of 1,875 b.h.p. Wet liners and individual four-valve cylinder heads are fitted.

The lubricating oil is filtered in a bank of full-flow Vokes filters and cooled in a



English Electric 1Co-Co1 1,840-h.p. diesel-electric locomotive on test track of Robert Stephenson & Hawthorns Limited

Serck tubular heat exchanger. Two Napier exhaust-driven turbo-chargers are used, the compressed charging air being cooled in a water-cooled heat exchanger. Driven from one camshaft, the mechanical all-speed engine governor controls the fuel-pump racks through a hydraulic servo. The engine is started by motoring the main generator from the battery.

The 60-in. dia. cooling fan is shaft driven from the free end of the engine through a right-angle gearbox. A Twiflex coupling, which incorporates a friction clutch, is fitted in the vertical drive shaft to cushion the drive.

The engine cooling is divided into two separate circuits, each with its own pump and radiator section. The engine coolant is circulated through the jackets

stages of traction-motor field diversion.

The six traction motors are four-pole axle-hung nose-suspended machines, driving through straight spur reduction gearing. The motors, fitted with class H insulation, have a one-hour rating of 620 A. 355V. 261 h.p. at 484 r.p.m., and a continuous rating of 550A. 355V. 234 h.p. at 505 r.p.m. The motors on each bogie are ventilated by a motor-driven Keith Blackman centrifugal fan. This air is filtered through oil-wetted metal filter panels in the bodyside of the blower compartments.

#### Wheel-Slip Protection

Wheel-slip protection is provided by sensitive relays in the equalising circuits which automatically reduce power until

ferred from the main truck to the top of the pivot, and the other end is linked to the leading end of the laminated spring of the first driving axle. Maximum use is made of rubber bushes to eliminate lubrication and maintenance.

#### Fuel Tanks in Main Frame

The main longitudinal members of the underframe are two box-form fabrications, braced together by cross-stretchers of similar construction and by the headstocks and dragboxes at each end. The central portions of the longitudines form the fuel tanks, interconnected by the hollow cross-members. The complete top deck is welded to form a dust-tight seal and below the power unit the floor is dished to form an oil tray.

Air for the brakes is supplied by a Westinghouse type 4C320 two-stage compressor. This is shaft-driven from the fan drive gearbox at the front of the engine. Individual brake cylinders, incorporating automatic slack adjusters, are fitted at each wheel. Operation is through clasp brake rigging. Independent and automatic air brake handles control the locomotive and the train brakes, the locomotive brake being interlocked with the dynamic brake so that both cannot be applied simultaneously. The dynamic brake on the locomotive and the air brakes on the train can be used together.

#### Force-Ventilated Resistors

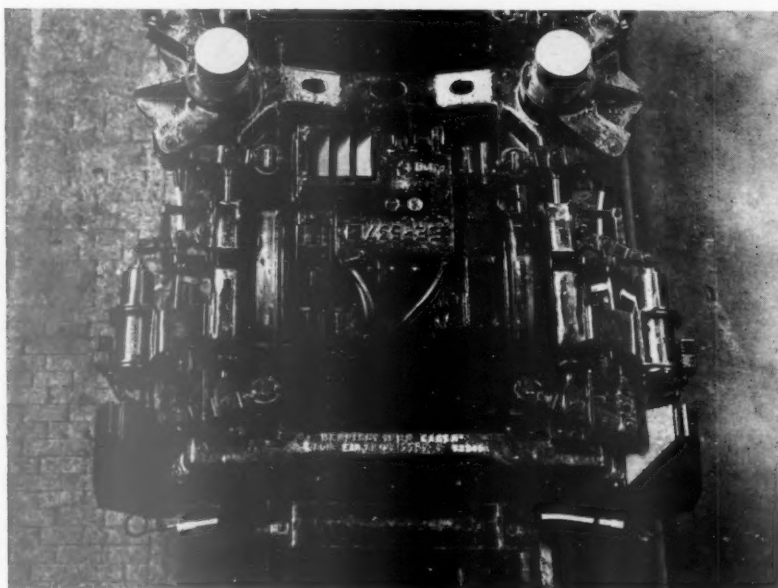
When the dynamic brake is engaged the traction motors are switched to function as generators driven by the wheels and the current thus generated is dissipated by the force-ventilated resistors. The capacity of this brake is such that a 700-ton trailing load can be controlled on a down grade of 1 in 66 at any speed between 14 and 25 m.p.h. without using the air brakes.

Sub-contractors include the following :

Brake equipment ...	Westinghouse Brake & Signal Co. Ltd.
Radiators ...	Spiral Tube & Components Limited
Air filters ...	Air-Maze Limited
Axleboxes ...	British Timken Division of the Timken Roller Bearing Company
Batteries ...	Chloride Batteries Limited
Cable ...	British Insulated Cables Limited
Fire extinguishers ...	Pyrene Limited
Bogie castings ...	Usines Emile Henicot K. & L. Steelfounders Limited
Lighting ...	J. Stone & Co. (Deptford) Ltd.

**NEW EXPORT COMPANY.**—The formation of a company to control export sales, carry spares, and provide service, has been announced by J. C. Bamford (Excavators) Limited. The new company will be known as J. C. Bamford (Exports) S.A., and will have its head office at Lausanne, Vaud, Switzerland.

**ULTRASONIC CLEANING.**—Application of ultrasonics to cleaning of industrial equipment, which has made some headway in the U.S.A., is now being introduced for railway equipment, but not yet for complete rolling stock or motive power units. Working at great speed and with great force, sound waves create a swirling sea of sub-microscopic bubbles constantly forming and collapsing that beat against the surface of the part being cleaned. This invisible bombardment is said to rip off the dirt.



*Inner end of bogie showing part of spring-controlled centralising device, one traction motor, brake gear, and the two side bearers*

and radiator by an engine-driven pump, with thermostatic by-pass control in the circuit to ensure rapid warming up. Circulation of coolant through the charge cooler, lubricating - oil heat exchanger, and radiator is by a separate pump, also engine driven.

#### Electrical Equipment

The main generator is a 10-pole single-bearing self-ventilated machine with a rating of 1,170 kW. 1,650 A. 710V. at 850 r.p.m. The generator, with the auxiliary generator overhung at the rear, is bolted solidly to the engine. Filtered cooling air for both machines is drawn from the engine compartment and the hot air discharged downwards through the underframe to prevent recirculation. The auxiliary generator is an eight-pole machine with a rating of 48 kW. 436A. 110V. at 850 r.p.m. Voltage is held constant throughout the speed range by a Newton carbon-pile automatic regulator.

Load control is by means of an oil-operated servo regulator controlled by the engine governor. This regulator is used additionally to initiate the various

the slip is checked. A bell rings in the cab, warning the driver against further advance of the controller.

The bogies are basically similar to those fitted to the 2,000-h.p. Rhodesian Railway locomotives. A one-piece steel casting with outside axleboxes is used for the bogie frame, and the superstructure weight is carried on a three-point mounting formed by a large diameter flat pivot which is resiliently mounted, and on two spring-loaded side bearers. Between the two main bogies is fitted a spring-controlled centralising device. This, on entering a curve, reduces the flange forces at the leading axle of each main bogie, positioning the trucks so that within the flange clearance of the truck and wheels they ride at the least possible angle of attack on the curves.

The pony truck has a one-piece steel frame on which is carried a sliding bolster, the wheel set being mounted on inside journals with a split cannon-type axlebox. Side control is by pre-loaded helical springs. The truck is attached to the main bogie by means of the bolster pivot and twin radial links. Load is trans-



## RAILWAY NEWS SECTION

## PERSONAL

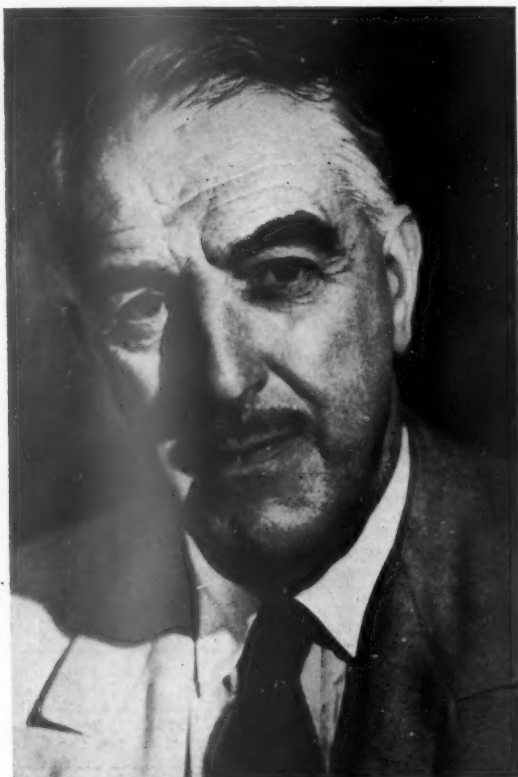
Sir Vincent Tewson, General Secretary, Trades Union Council, is retiring. He will be succeeded by Mr. George Woodcock, Assistant General Secretary.

Sir Andrew Strachan, former Chairman of the Rhodesia Railways Board, whose retirement was recorded in our June 24 issue, was born in Northern Ireland in 1895, and educated at Rathmines College. He served

the Commonwealth Railways, controlled by the Federal Government of the Commonwealth of Australia, and was engaged on work connected with the construction and early working of the Trans-Continental Railway, which crosses the Australian continent and links Western Australia with South Australia and the Eastern States. In 1925, Mr. White joined the service of the Westinghouse Brake Co. (Australasia) Pty. Ltd., as a member of the engineering staff assisting the Chief Engineer, at the Head

Mr. T. R. Vachha, Engineer-in-Chief, Brahmaputra Bridge Project, India, has been appointed Chief Engineer, Northeast Frontier Railway.

Mr. T. H. Grey, who, as recorded in our June 24 issue, has been appointed Chairman, Rhodesia Railways Board, joined the Rhodesia Railways in 1920. He had previously worked with the former North Eastern Railway (England), and served in the 1914-18 war, during which he was wounded and



*Sir Andrew Strachan*

Chairman, Rhodesia Railways Board,  
1954-60



*Photo]*

*"The Chronicle," Bulawayo*

*Mr. T. H. Grey*  
Who has been appointed Chairman,  
Rhodesia Railways Board

throughout the 1914-18 war with the Royal Dublin Fusiliers, with active service in Gallipoli and France in the rank of Captain. He joined the British South Africa Company's administration in 1921 and was appointed Commissioner of Taxes in 1933 and Secretary to the Treasury in 1941. Sir Andrew Strachan was created a Commander of the Order of the British Empire in the 1947 New Year Honours List and was knighted (Knight Bachelor) in the Coronation Honours. He played a leading part in the preparations for the formation of the new Federation of Rhodesia and Nyasaland, and was appointed Chairman of the Rhodesia Railways Board in July, 1954.

We regret to record the death of Mr. J. White, formerly Manager, Westinghouse Brake Co. (Australia) Pty. Ltd. Mr. White who was born in 1893, in the State of Victoria, Australia, served an apprenticeship to fitting and turning in the workshops of the Victorian Railways. He saw further service with the Victorian Railways, and then transferred to

Office & Works of the Company at Concord West, near Sydney, N.S.W. In 1932 he was promoted to be Chief Engineer. In 1944 he became Manager & Chief Engineer. With the progress of the Company it became necessary for him to concentrate on his duties as Manager, and in 1948 the two positions were separated. He retired from the position of Manager, and from the company in 1954. Mr. White was a Member of the Institution of Locomotive Engineers.

Mr. D. E. Graham has been elected Chairman of the Council, Institute of Export.

Mr. J. D. K. Martin, who has been appointed Manager, Canadian National Telegraphs, Montreal, Canadian National Railways, was born in Scotland, and joined Canadian National Telegraphs at Toronto in 1922 as a messenger. He held various positions including Relief Branch Office Manager, and in 1949 he moved to Ottawa as Assistant Manager, and was promoted to be Manager, Ottawa, in 1956.

taken prisoner. He became a Locomotive Driver Class 1, but retired in 1938 for reasons of health. He was appointed Assistant General Secretary, Rhodesia Railways Workers' Union in March 1938, and acted as General Secretary for three years, and subsequently became General Secretary in 1945. He retired from this position in January, 1951. During the second world war he was a member of the Industrial Development Advisory Committee to the Southern Rhodesia Government. He carried out an employment survey for the Southern Rhodesia Government and established State Registry Offices throughout the colony. In the post war years he became a member of the Agricultural Marketing Council and a member of the Southern Rhodesia cost-of-living commission. He was appointed a Member of the Rhodesia Railways Board in November 1950, and became Vice-Chairman in January, five years later. He acted as Chairman for 15 months during the period 1954-59, and succeeded Sir Andrew Strachan, C.B.E., as Chairman on March 1, 1960. Mr. Grey was awarded the



**Mr. H. Hoyle**

Appointed Operating Officer, British Railways Central Staff



**Mr. T. V. Nicholson**

Appointed Rolling Stock Officer, British Railways Central Staff



**The late Mr. C. W. G. Elliff**

Road Transport Liaison Officer, Southern Region, 1948-60

M.S.M. and mentioned in despatches during the 1914-18 war, and was created a C.B.E. (Civil) in 1955.

Mr. H. Hoyle, Movement Officer, Liverpool Street, Eastern Region, who as recorded in our August 19 issue, has been appointed Operating Officer, British Railways Central Staff, was educated at Archbishop Holgate's School, York, and began his railway career with the North Eastern Railway in the General Superintendent's Office at York. He became a Traffic Apprentice in 1927 and, after completing his training, was appointed to a position in the Locomotive Running Superintendent's Trains Section at York. He returned to the Operating Department in 1932 and occupied a number of positions dealing with all aspects of passenger and freight train working. In 1944, Mr. Hoyle was promoted from the position of Deputy Chief Controller, North Eastern Area, L.N.E.R., to be Head of the Superintendent's and Locomotive Running Superintendent's Joint Passenger Trains Section, Southern Area, L.N.E.R., and, in 1947, became Chief Freight Trains Clerk & Controller in the same office. In 1948 he was appointed Traffic Officer (Passenger) in the Eastern Group Operating Office attached to the Railway Executive. When, under a change in organisation, the position of Operating Superintendent, Eastern & North Eastern Regions, was created, Mr. Hoyle became Assistant (Passenger Trains), and, in 1952, was appointed Assistant (Freight Trains) to the Operating Superintendent, Eastern & North Eastern Regions. With the abolition of the bi-regional Operating organisation at the end of 1955, he was appointed Trains Assistant to the Chief Operating Superintendent, Eastern Region (later Operating Superintendent, Eastern Region). In May, 1957, he was appointed to the position which he now vacates.

Mr. A. W. Crombie, Mechanical Engineer, Bulawayo, Rhodesia Railways, has been appointed Senior Mechanical Engineer.

Mr. C. H. T. Williams and Mr. E. G. Plucknett have been appointed to the Board of Tube Investments Limited, Mr. Williams is Chairman of the Park Gate Iron & Steel Co. Ltd. and Round Oak Steel Works Limited, and Mr. Plucknett is Managing Director of the Simplex Electric Co. Ltd.

Mr. T. V. Nicholson, Freight Rolling Stock Officer, British Railways Central Staff, who, as recorded in our August 19 issue, has been appointed Rolling Stock Officer, joined the London & North Eastern Railway in 1930 and, after training in the Traffic Department, was appointed Assistant to the Industrial Agent in 1934. In 1935 he became Assistant to the Mineral Manager, Doncaster, leaving that position in 1939 to become head of the Passenger Manager's Development Section at York. Between 1939 and 1945 he was in Army Movement Control, except for a short period in 1941 when he was seconded to the railways for temporary duty in the U.S.A. and Canada in connection with the loading of cargoes for British West Coast ports. In 1945 Mr. Nicholson returned to railway service as Assistant District Passenger Manager, Newcastle, and, two years later, became Assistant District Superintendent there. In 1948 he was appointed District Operating Superintendent, Sunderland, and in 1950, Assistant Chief Docks Manager, Humber Ports. In 1955 he was appointed Passenger Officer, British Railways Division, British Transport Commission, and was later made Freight Rolling Stock Officer, the position which he now vacates.

Mr. T. Jolly is retiring as Joint Managing Director of the Guest Keen Iron & Steel Co. Ltd., with effect from January 1, 1961.

Mr. H. V. Bouldstridge, Sales Organiser, Guest Keen & Nettlefolds (Midlands) Limited, Screw Division, has been appointed a Director of the company.

The late Mr. C. W. G. Elliff, former Road Transport Liaison Officer, Southern Region, whose death was recorded in our August 26 issue, entered the service of the South Eastern & Chatham Railway in 1911 in the Audit Accountant's Office, and was subsequently transferred to the Goods Manager's Office. From 1915-19 he served with H.M. Forces at home and in France, and held a commission in the City of London Fusiliers. When the grouping of the railways was effected in 1923 Mr. Elliff was appointed to the personal staff of the Chief Commercial Manager, Southern Railway, and he was transferred to the Traffic Manager's Department on its formation in 1930. Five years later he was appointed Assistant

to Road Transport Liaison Officer and nominated a member of the standing joint committees set up under the working agreements between the Southern Railway and its associated bus companies. He was appointed Acting Road Transport Liaison Officer during Mr. J. C. Chambers's absence on military service from September, 1939, to July, 1944, and in the latter year was appointed deputy Road Transport Liaison Officer. In October, 1948, he was promoted to be Road Transport Liaison Officer, which position he held until his retirement from railway service in February, 1960. Mr. Elliff was a Director of the Devon General Omnibus & Touring Co. Ltd., and Southern Vectis Omnibus Co. Ltd. He was also a member of the management committee of the Southern National Omnibus Co. Ltd., and a member of the Exeter Joint Transport Committee.

After the funeral service for Mr. Elliff, private cremation took place at Hastings Crematorium on Monday, August 15. In addition to the family mourners, the following were among those present at the service:—

#### *Southern Region*

Mr. W. H. F. Mepsted, former Chief Development Officer, also representing Mr. C. P. Hopkins, General Manager; Mr. B. T. Wright, General Purposes Assistant, also representing Mr. P. A. White, Assistant General Manager (Traffic) and Mr. F. P. B. Taylor, Commercial Officer; Mr. K. Blue, Freight Commercial Officer, also representing Mr. T. Bolland, Line Traffic Manager, South Eastern Division; Mr. W. C. Collins, District Traffic Superintendent, Redhill, also representing Mr. N. L. Collins, Trains Assistant; Mr. W. Clayton, Chief Clerk, District Traffic Superintendent's Office, Woking, also representing Mr. H. E. Barber, District Traffic Superintendent; Mr. E. Bunting, former Chief Clerk, Chief Commercial Manager's Office; Mr. W. A. Bartlett, former Passenger Fares Assistant; Mr. W. H. Brown, former Head of Sub-Section (Road Transport Liaison); Mr. A. P. Whiffin, Assistant (Road Transport Liaison), also representing Transport Users' Consultative Committee, South Eastern Area; Mr. H. F. Boorman, Head of Sub-section (Road Transport Liaison).

#### *Others Present*

Mr. J. C. Chambers, Secretary, Central Transport Consultative Committee; Mr. W. M. Dravers, B.E.T. Federation, also repre-



Mr. T. Bilbow

Architect, London Transport Executive,  
1945-60



Mr. K. J. H. Seymour

Who has been appointed Architect,  
London Transport Executive



Mr. A. V. Elliott

Appointed Assistant Architect of the  
London Transport Executive

sending Devon General Omnibus & Touring Co. Ltd.; Mr. A. S. Woodgate, General Manager, and Mr. G. Duckworth, Traffic Manager, Southdown Motor Services Ltd.; Mr. A. White, General Manager, Mr. S. Smith, Traffic Manager, and Mr. T. Homer, District Superintendent, Maidstone & District Motor Services Limited; Mr. P. W. Dodge, Traffic Manager, also representing Mr. R. G. James, General Manager, East Kent Road Car Company Limited; Mr. H. G. Baker, General Manager, also representing the Tilling Group Management Board, Brighton, Hove & District Omnibus Co. Ltd.

Mr. T. Bilbow, Architect, London Transport Executive, who, as recorded in our July 1 issue, has retired, joined the staff of the Architect to the Underground Group of Companies as an Architectural Assistant in 1922. His first task was to prepare designs for the new stations on the Hampstead line (now Northern Line) extension from Golders Green to Edgware. On the formation of the London Passenger Transport Board in 1933, Mr. Bilbow was appointed Senior Assistant (Railways) in the Office of the Architect. Five years later he was made Assistant Architect, and in the same year he visited several European countries to study concrete finishings and report on his findings. He became Architect in 1945, and was made an Officer of the Board in the same year.

We regret to record the death of Mr. G. L. Drury, formerly Assistant Electrical Engineer, N.E. Area, former L.N.E.R.

Mr. H. C. Steeples, Assistant Engineer (New Works), North Eastern Region, has been appointed Assistant Civil Engineer (Modernisation), N.E. Region, York.

Mr. J. Banks has been appointed Chief Engineer of the Power Cables Division, British Insulated Callender's Cables Limited.

Mr. W. C. Bell and Mr. D. Campbell have been appointed to the board of the Wellman Smith Owen Engineering Corporation Limited.

Mr. W. K. Whiteford has been elected a Director of the International Nickel Company of Canada. Mr. L. S. Rockefeller has resigned as a Director and has been appointed a member of the Advisory Committee.

Mr. K. J. H. Seymour, Principal Assistant Architect, London Transport Executive, who, as recorded in our July 1 issue, has been appointed Architect, entered the service of the London Passenger Transport Board in 1935, and until the outbreak of war was mainly engaged on designs for railway works. From 1940 to 1945 he served with the R.A.F. as a bomber pilot, and was awarded the Air Force Cross. He was demobilised at the end of 1945 with the rank of Flight Lieutenant. In 1949, Mr. Seymour was responsible to the Architect for the design and construction of Garston Garage, Watford, and in 1950 he was placed in charge of a special section with the responsibility of designing the London Transport bus overhaul works, Aldenham. Recently Mr. Seymour has been responsible for the new garages at Hatfield and Stevenage, and the bus station at Crawley New Town. He became an Officer of the Executive when appointed to his new position.

Mr. K. E. Merefield and Mr. W. B. Sallitt have been appointed Directors of the Superheater Co. Ltd.

#### TRANSPORT USERS' CONSULTATIVE COMMITTEE, NORTH WESTERN AREA

The following have been appointed members of the Transport Users' Consultative Committee, North Western Area :—

##### Chairman

Sir Patrick G. Hamilton, Bart.

##### Members

Mr. J. Heyes, and Mr. M. Raven, representing agriculture; Mr. W. D. Broadbent, Mr. J. T. Moss, and \*Mr. B. E. Walley, representing industry; \*Brigadier H. Miller, Mr. P. T. Watson, and Mr. F. Abbotts, representing commerce; Mr. A. N. Hunt, representing shipping; Mr. M. J. Newton, and \*Mr. W. Donoghue, representing labour; County Aldermen H. H. Robinson, Councillor D. D. Williams, Councillor C. S. McDonald, and Alderman H. H. Baird, representing Local Authorities; Mr. W. E. Macve, and \*Mr. J. Royston, representing British Transport Commission; \*Miss L. Hodson, Additional Member.

\*Indicates new member.

Secretary of the Committee is Mr. C. Dove.

Mr. G. A. Smith, Managing Director of John Smith (Keighley) Limited, has resigned his appointment, but retains his seat on the

board in a consultative capacity. He is succeeded by Mr. Frederick Johnson, a Director of Thomas Smith & Sons (Rodley) Limited.

Mr. A. V. Elliott, Principal Assistant Architect, London Transport Executive, who, as recorded in our July 1 issue, has been appointed Assistant Architect, joined the staff of the Underground Group of companies in 1923. Until 1947, when he was appointed Principal Assistant Architect, he was engaged on various projects, including the reconstruction of stations on the Western extension of the Piccadilly Line, and on the Eastern extension of the Central Line. Mr. Elliott has had wide experience of architectural matters concerning both rail and road transport and, in recent years, has been primarily responsible to the Architect for works associated with London Transport railways, among them the architectural work associated with the reconstructed Notting Hill Gate Station, the Metropolitan Line Improvements programme, and the recently-opened Upminster Depot. Mr. Elliott became an Officer of the Executive when appointed to his new position.

Mr. G. C. Manly, Senior Assistant Architect, and Mr. A. D. McGill, Senior Assistant Architect, London Transport Executive, have been appointed Principal Executive Assistants in the Department of the Architect, L.T.E., each with the title of Principal Assistant Architect. Mr. Manly and Mr. McGill both joined the Architect's Office of the Underground Group of Companies in 1931, and were appointed Senior Assistant Architects in 1948 and 1949 respectively.

We regret to record the death of Mr. L. P. Beevor, a Director of Gee, Walker & Slater Limited.

We regret to record the death of Mr. J. D. Miller, Manager in the Irish Republic, Ferodo Limited.

Mr. W. A. Nicol, Group Secretary, and Mr. W. W. Fea, Group Chief Accountant, Guest, Keen & Nettlefolds Limited, have been appointed Administrative Director and Financial Director respectively. Mr. I. F. Howard has been appointed Group Secretary, and Mr. F. C. Rowbottom has been appointed Group Chief Accountant.



## NEW EQUIPMENT AND PROCESSES



### Mobile Rotary Compressor

**T**HE Power Vane 260-RO-2 compressor has been produced to meet the demand for a unit between the existing sizes of 210 and 365 cu. ft. per min. It has a capacity of 260 cu. ft. per min. at 100 lb. per sq. in. A special feature is the new styling which has been adopted.

It is a two-stage in-line rotary compressor powered by a Leyland U.E. 375 six-cylinder diesel engine through a safety friction drive. The Power Vane principle uses an eccentric rotor equipped with sliding vanes which compress air in a cylindrical chamber; a fine spray of oil lubricates the vanes, seals the clearances, and cools the air at the time of compression.

Positive alignment of the engine and first-stage compression casing is made by a tandem piece which supports the casing and is bolted to the engine flywheel housing. An inter-stage tandem piece mounts the second stage. The rear end of the second stage casing is closed by the oil-pump housing and cover; a head plate encloses the front end. A rotary shaft seal is located at the drive end of the compressor. Both first- and second-stage casings are of the same diameter; the second-stage casing is of shorter length. Each rotor carries eight blades of non-metallic composition and is mounted on shim-adjusted taper-roller bearings at each end.

The direct-injection four-stroke engine is water-cooled. The continuous 12-hr. rating for this duty, at a governed speed of 1,800 r.p.m., is 82 b.h.p. The cylinder bore is

4.1 in., and the piston stroke 4.75 in. The compression ratio is 16 to 1. The cylinders and crankcase are of cast-iron integral construction with dry cast-iron liners. The balanced alloy-steel crankshaft has nitrided surfaces. The governor is a Simms mechanical all-speed type fitted integrally with the injection pump which is of the enclosed camshaft type.

Further details may be obtained from the manufacturer, the Consolidated Pneumatic Tool Co. Ltd., 232, Dawes Road, London, S.W.6.

### Decorative Laminate

**ARBORITE** is a Canadian decorative and industrial laminate newly available in the United Kingdom. It is available in over 100 patterns, 14 sheet sizes, and several grades. A pre-cut edge trim is packaged in 10-ft. rolls and there is an aluminium extrusion in five different sections clad with matching laminate for counter noses, dividers, corners, and so on.

Further details can be obtained from the Arborite Co. (U.K.) Ltd., Bilton House, Uxbridge Road, Ealing, W.5.

### Lightweight Cutting Torch

**T**HE Firefly lightweight oxy-acetylene hand-cutting blowpipe weighs only 12 oz., cuts up to  $\frac{3}{4}$ -in. thick steel, and is resistant to backfires.

Construction is sufficiently robust to

withstand hard usage. The compact arrangement includes forward-mounted controls. Nozzle mixing and good flame-control are claimed to make the Firefly ideal for repair work and delicate cutting of light sheet steel.

This blowpipe will be exhibited for the first time at the Commercial Motor Show at Earls Court, London, on September 23—October 1.

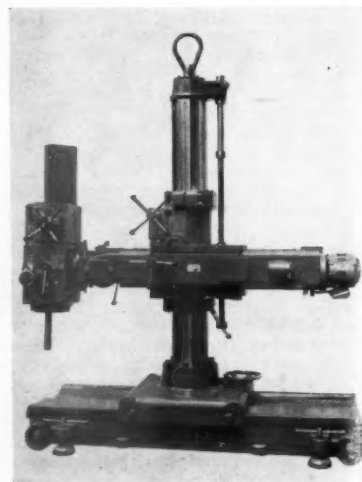
Further details may be obtained from British Oxygen Gases Limited, Spencer House, St. James's Place, London, S.W.1.

### Portable Radial Drill

**T**OWN 5-ft. and 6-ft. portable universal radial drilling machines are intended primarily for drilling and tapping on large components which cannot easily be moved and for operations on work which needs angular holes.

Special features of the design include a bogie base, traversing column, and an elevating, swivelling, and tractable arm with universal head. There are 12 spindle speeds, giving 40 to 708 r.p.m., and four rates of power feed. Capacity is for drilling up to 2 in. dia. in mild steel and tapping up to  $1\frac{1}{2}$  in. Whitworth. The drive is by a 4-h.p. motor. The head swivels through 360 deg.

The radial arm is accurately fitted to the column slide which is elevated by power from a second built-in motor of 2 h.p. In

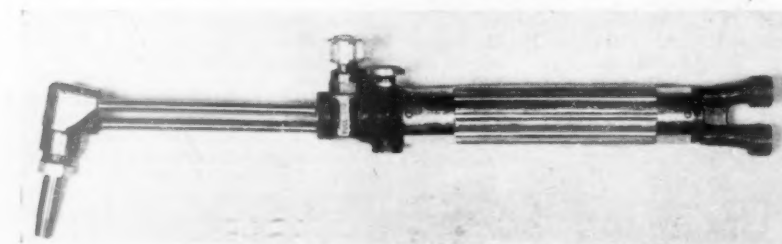


addition to traversing across the column, the arm may be tilted through 30 deg. in the vertical plane; both these movements are obtained by the use of star handles.

After positioning the machine, for which a hook eye is provided to facilitate lifting by crane when there is no clear run for use of the wheels alone, it is only necessary to make a connection by power cable to bring it into operation. Four screwjack supports aid levelling and stability.

The no. 4 morse-taper spindle is reversed by a friction clutch arranged at the driving end of the radial arm. Feeds are obtained by enclosed gearing in the spindle head and changes can be effected almost instantaneously without stopping the machine. Any of the four rates of feed can be used with any of the 12 spindle speeds.

Further details may be obtained from Fredk. Town & Sons Ltd., Mile Cross Engineering Works, Gibbet Street, Halifax.



## Bargain Week-end Trips from Glasgow

While the Blackpool and Morecambe illuminations are on, the Scottish Region of British Railways is offering week-end excursion tickets at bargain rates. The tickets will be issued from Glasgow (Central), Motherwell, Paisley (Gilmour Street or St. James), Port Glasgow, Greenock (Central or West), and Gourock each week-end from September 2 to October 15. As an example, the special rate from Glasgow to Blackpool is £2, and to Morecambe, £1 15s.

Outward travel is by the 4.30, 6.50, or 11.30 p.m. service from Glasgow Central on Fridays (except September 23), or 10.50 a.m., 1.45 p.m. (September 3 and 10 only), 4.30 p.m., 6.50 p.m., or 11.30 p.m. on Saturdays (except September 24). Motherwell departures are 20 min. later. Passengers from Gourock, Greenock, Port Glasgow, and Paisley travel by any train service to Glasgow to connect with these trains.

The return journey from Blackpool or Morecambe is by any service on the Saturday, Sunday, or until 4.30 p.m. (Blackpool), or 5.20 p.m. (Morecambe) on Monday of the same week-end.

At the Glasgow Autumn holiday week-end—September 23 and 24—special through trains will run from Glasgow and Motherwell to Blackpool and Morecambe. The services quoted above will not be available for passengers from Glasgow and Motherwell on these dates.

## Railhead for Bulk Handling of Cement

Arrangements have been made by the Western Region of British Railways to handle 130,000 tons of cement on behalf of the Cement Marketing Co. Ltd. and destined to the new Llanwern steelworks of Richard Thomas & Baldwin Limited.

To deal with this addition to the already considerable volume of constructional materials being handled by the Western Region for the project a railhead has been established at Magor.

The cement is loaded in 20-ton "Presflo" wagons and a train comprising 17 to 21 wagons is despatched nightly from Dartford (Kent). On arrival at Magor, at noon the following day, part of the cement is discharged by portable air compressors provided by the Western Region into two silos which accommodate 186 tons of Portland and 62 tons of Ferroconcrete cement in separate compartments. Discharge from each wagon to silo is accomplished in 30 min. The residue

is transferred to pressurised road vehicles which effect delivery to site.

## English Electric House Completed

The new headquarters' offices of the English Electric group of companies are now completed and occupy the former site of the Gaiety Theatre in the Strand, London, and include Marconi House. The new building will be called English Electric House, and Marconi House will now be known as the Marconi



*New headquarters offices of the English Electric group of companies*

Wing. The main entrance façade of the new building is opposite the approach to Waterloo Bridge, and two wings extend from it, 90 ft. along the Strand and 120 ft. along Aldwych, joining with the Marconi Wing to enclose a central courtyard.

The main entrance façade is the feature of English Electric House. The doors are deeply cut panelled steel, and on either side above them are two 18-ft. high bronze figures by Sir Charles Wheeler, President of the Royal Academy. The figures represent "Power" and "Speed"; "Power" by a human figure holding a lion and "Speed" by a figure carrying an eagle. The figures are covered in aluminium leaf and each weighs approximately three tons.

### Silicone-treated Stone

The building with the Marconi Wing provides a total floor area of some 200,000

sq. ft., and from lower basement to roof contains 14 floors. The building is faced in Portland stone treated with silicones to eliminate cleaning costs, and the window casements throughout are in aluminium alloy. Double casements are fitted up to fourth floor level to reduce traffic noise.

Plant for the electric heating system, a sub-station for the electricity supply, and air conditioning and ventilation systems are housed in the lower basement. All the services are automatically monitored and controlled from one console.

## Oldham Clegg Street Goods Depot

Work on the now complete £160,000 reconstruction and re-equipment of British Railways' Oldham, Clegg Street, goods depot, has involved the erection of a 400 ft. x 198 ft. shed for parcels traffic, an office, and a staff amenities block.

Clegg Street is the first of a number of main parcels depots planned by the Region to remove parcels traffic from passenger stations in the greater Manchester area to specialised central depots.

Its completion means that direct collection and delivery can be made of parcels traffic within an area including Greenfield, Ashton, Middleton, Rochdale, Radcliffe, Denton, Stalybridge, Hollinwood, Heywood, Bury and Shaw and Crompton. Expanded handling facilities will simplify the processing of the large amount of mail order business which originates in the district.

Mechanical equipment consists of four articulated tractors and 18 trailers, and an elevating platform truck.

## Staff and Labour Matters

### Strike of London Underground Maintenance Workers

Maintenance staff responsible for lifts and escalators at a number of London Underground stations decided on August 26 to go on strike unofficially unless voluntary workers manning pumping stations at which there is also an unofficial strike were withdrawn.

The men stopped work on Friday, August 26 in sympathy with the pump workers who have staged an unofficial strike because of dissatisfaction in connection with a wage claim. In consequence, certain lifts and escalators at important stations were out of action.

### Claim for Shorter Railway Working Week

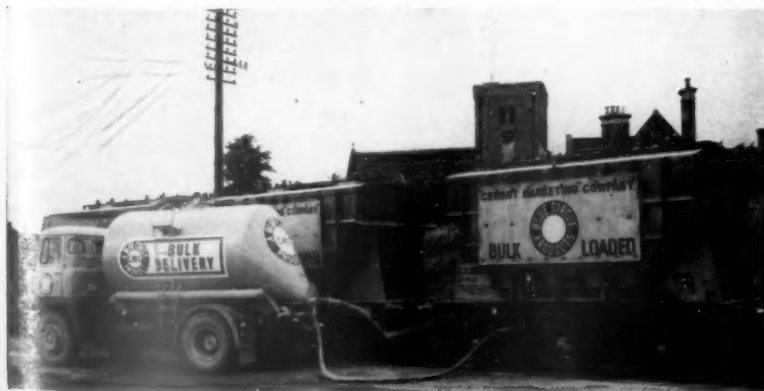
Claims submitted by the railway trade unions for a 40-hr. week for railway conciliation staff and 38-hr. for salaried staff were rejected by the British Transport Commission at a meeting of the Railway Staff Joint Council on August 30.

### Railway Shopmen's Pay Claim

A meeting took place on August 30 between the Chairman, Sir Brian Robertson, and representatives of the British Transport Commission and representatives of the Employees' Side of the Railway Shopmen's National Council.

The representatives of the Employees' Side explained why they had been unable to accept the Commission's offer for improved rates of pay and London allowances made at the meeting of the Shopmen's Council held on August 23, 1960.

The whole matter was very fully discussed and it was agreed to adjourn the meeting without commitment on either side. A further meeting will be held on September 2.



*Bulk-handling of cement at Magor, Western Region*

## Contracts and Tenders

### *Diesel power coaches for the Ceylon Government Railways*

Maschinenfabrik Augsburg - Nürnberg A.G. has received a repeat order from the Ceylon Government Railways for five diesel power coaches. (See editorial reference to this contract on page 267).

The Berne-Lötschberg-Simplon Railway has ordered one new twin-unit Ae8/8 single-phase electric locomotive of 8,000 h.p.; the mechanical portion and erection are to be undertaken by the Swiss Locomotive & Machine Works (S.L.M.).

British Railways, Eastern Region, has placed the following contracts:

W. & C. French Limited: reconstruction of sheet-piling at the ends of underline bridge No. 58 between Branston (Goods) and Saxilby

Bernard Pumfrey Limited: provision of staff accommodation at east end of new yard at Frodingham

James Scott & Co. (Electrical Engineers) Ltd.: provision of electrical installations at Hertford East and Bishops Stortford

Joseph Westwood & Co. Ltd.: reconstruction of superstructure of underline bridge No. 449 over High Street between Saxmundham and Darsham

Thomas Fletcher & Co. Ltd.: forming of an embankment, construction of subways Nos. 1916 and 1917 and strengthening of arches Nos. 505 to 509 inclusive of Rectory Road Viaduct, between Hackney Downs and Rectory Road

W. R. Payne & Sons Ltd.: cleaning and painting of stations, buildings, structures, bridges, and so on, between Broxbourne Junction and Hertford East Station

Eagre Construction Co. Ltd.: provision of new drainage and a sand blanket and the trimming of the cutting slopes between Newark and Retford (137m. 1,210 yd. to 137m. 1,606 yd.)

William Boby & Co. Ltd.: supply, delivery and installation of water softening plant and water storage tank, together with associated equipment at Finsbury Park Diesel Maintenance Depot

Cibitt & Gotts Limited: construction of signalbox at Colchester

Charles R. Price: repairs to awnings and down platform wall, repointing and renovation of brickwork and stonework and replacement of urinals in lavatories at Barnsley Exchange Station.

Thomas Fletcher & Co. Ltd.: remedial measures in connection with slip in embankment at Bridge No. 259 between Barkston and Hougham.

British Railways, London Midland Region, has placed the following contracts:

Mellowes & Co. Ltd.: patent glazing for new diesel servicing shed at Carlisle marshalling yard

Jesse Tildesley Limited: supply and erection of structural steelwork for new diesel servicing shed at Carlisle marshalling yard

Tarmac Civil Engineering Limited: reconstruction of bridge No. 13 and construction of footbridge and substructure for shops at Perry Bar Station, Birmingham

W. H. Heywood & Co. Ltd.: patent roof glazing at motive power depot, Kingmoor, Carlisle

Marshall Andrew & Co. Ltd.: main office, forwarding shed office, weighbridge, and weighbridge office at Watford Freight Terminal

E. C. Payter & Co. Ltd.: aluminium structural frame, aluminium panel ex-

trusions, and aluminium flashings for pre-fabricated station buildings

J. Rata & Co. Ltd.: renewal of coverings to verandah roofs at Manchester Central

Thomas Fletcher & Co. Ltd.: reconstruction of bridge No. 30 on Trent Valley line

Edward Wood & Sons Ltd.: new boiler house at Old Works, Crewe.

The Export Services Branch, Board of Trade, has received calls for tenders as follow:—

#### *From Argentina:*

2 ferryboats for the transport of passenger coaches and goods wagons

The issuing authority is the Argentine State Railways Administration. The tender No. is 44/60. The closing date is November 8, 1960. Conditions of tender, which cost 2,000 pesos, may be obtained from the tender section at Av. Corrientes 389, Buenos Aires. No further information is available at the Board of Trade. The Board of Trade reference is ESB/21993/60.

10,800 axleboxes

600 bogie centres with corresponding bolts and pins.

The issuing authority is the Argentine State Railways Administration. The tender No. is 37/60. The closing date is September 9, 1960. Copies of tender documents can be obtained from the tender section at Av. Corrientes 389, Buenos Aires. No further information is available at the Board of Trade. The Board of Trade reference is ESB/21992/60.

70,700 springs of all types for coaches, wagons, and vans

The issuing authority is the Argentine State Railways Administration. The tender No. is 36/60. The closing date is September 20, 1960. Copies of tender documents can be obtained from the tender section at Av. Corrientes 389, Buenos Aires, at a cost of 500 pesos. The Board of Trade reference is ESB/21991/60. No further information is available at the Board of Trade.

726 points of manganese steel, with accessories

780 monoblock crossovers of manganese steel, with accessories.

The issuing authority is the Argentine State Railways Administration. The tender No. is 25/60. The closing date is September 7, 1960. Copies of tender documents may be obtained from the tender section at Av. Corrientes 389, Buenos Aires, at a cost of 800 pesos. The Board of Trade reference is ESB/21990/60. No further information is available at the Board of Trade.

#### *From Pakistan:*

1,000 key plates for 7 in. x 4 in. bogie axleboxes, cast steel to I.R.S. drg. No. W/830 alt (9).

The issuing authority and address to which bids should be sent is the Chief Controller of Stores, E.B. Railway, Pahartali, Chittagong. The tender No. is P5/EBI/36/59. The closing date is October 25, 1960. No further information is available at the Board of Trade. The Board of Trade reference is ESB/22676/60.

10 items of plant and machinery for diesel-electric locomotive workshops at Lahore, including cranes, grinding machine, lifting jacks, electric hoist, portable welding plant, platform auto

trucks, rectifier type battery charging set, and laboratory equipment.

The issuing authority is the Secretary, Railway Board, Ministry of Railways & Communications, Government of Pakistan, Karachi, to whom bids should be sent. The tender No. is PRS-58/PMP/3/TOR. The closing date is October 24, 1960. The Board of Trade reference is ESB/22661/60.

Further details relating to the above tenders together with photo-copies of tender documents, unless otherwise stated, can be obtained from the Branch (Lacon House, Theobald's Road, W.C.1).

## Notes and News

**G.E.C. Scholarships.**—The General Electric Co. Ltd. has awarded 20 university scholarships this year under the scheme established by the company in 1957. Most of this year's scholarship holders will be going up to Cambridge in 1961.

**"Castle" Class Locomotive for Kensington Science Museum.**—The British Transport Commission has presented to Kensington Science Museum, London, the 4-6-0 tender locomotive *Caerphilly Castle* of British Railways, Western Region. It is hoped that the locomotive will form the centre-piece in an extension being built at the Museum.

**New Metropolitan Line Timetable.**—London Transport Executive has announced that a new timetable for the Metropolitan Line will be introduced on September 12. While the frequency of the train service south of Rickmansworth will remain generally as at

## Western Region Publicity

(See editorial on page 266)

*Specially-designed poster for the introduction of diesel Pullman express services in the Western Region*



present, the service to Amersham will be improved. At the same time, the progress of the engineering works where the line is being doubled between Harrow and the Watford branch junction will allow some speed restrictions to be lifted and reductions to be made in train journey times. These times were specially increased last January to take account of the restrictions. Another feature of the new timetable will be in the introduction of electric trains for the first time to Chesham and Amersham now that the electrification of the line north of Rickmansworth has been completed.

**Extension to Loughton Station Car Park.**—The London Transport Executive has announced that an extension has been opened to the car park at Loughton Station on the Central Line. This provides room for an additional 35 cars, bringing the capacity of the park to 75 cars.

**Charles Churchill & Co. Ltd., Change of Address.**—Charles Churchill & Co. Ltd., has moved its Manchester branch office and warehouse from St. Simon Street, Salford 3, to 2-12, The Crescent, Salford 5, tel.: Pendleton 1382, telegrams Opodeldoc, Salford 5. The new premises will open on September 12.

**Railway Stations Gardens Competition.**—In this year's competition for best-kept station gardens, in the North Eastern Region of British Railways, six stations qualified for special class awards. These stations were Beverley, Cottingham, Ferriby, Goathland, Acklington, and Beal. First class awards were given to 18 stations, second class to 37 stations, third class to 60 stations, and certificates of commendation to nine stations.

**Increase in Visitors to Britain.**—The British Travel & Holidays Association has stated that 206,560 overseas visitors came to Britain in June, 19 per cent more than in the same month of 1959. This brings the total tourist traffic for the first six months of the year to 656,900 one-fifth more than in the first half of last year, which also was a record. The total number of visitors from Europe during the first six months of 1960 was 285,000, an increase of 19 per cent on the corresponding period of 1959.

**Powell Duffryn Limited Results.**—The consolidated trading profits, including income from investments and interest receivable, of Powell Duffryn Limited for the year ended March 31, 1960, after deducting interest on debenture stock, directors' remuneration, and profits attributable to outside shareholders, was £2,044,732. This compares with £1,720,230 for the previous year. The consolidated net profit for the year was £1,181,125 (£1,075,560). The board recommends payment of a final ordinary dividend of 10 per cent, less tax, making, with the interim dividend paid in February, 16 per cent for the year. The annual general meeting will be held on September 21.

**British Railways, Southern Region, Lecture & Debating Society.**—On October 5 the British Railways, Southern Region, Lecture & Debating Society, will open its thirty-second session with an address on "The History and Work of the Railway Inspectorate, Ministry of Transport," by Brigadier Langley, Chief Inspecting Officer, Railway Inspectorate. The chair will be taken at this meeting by the President of the Society, Mr. C. P. Hopkins, General Manager, Southern Region. Speakers during the session will include Mr. E. Anstey, Chief Officer (Films), British Transport Commission, Mr. F. A. Trott, Regional Welfare Officer, Mr. J. B. W. Heyman,

British Railways General Agent for Western Germany, Mr. W. J. A. Sykes, Southern Region Chief Mechanical & Electrical Engineer, and Mr. R. E. Sinfield, Shipping & Continental Manager, Southern Region. An essay competition is again being held with monetary prizes for the best entries received.

**English Electric Co. Ltd.**—The English Electric Co. Ltd. has announced an unchanged interim ordinary dividend of 3 per cent, payable on September 15.

**A. A. Jones & Shipman Limited.**—A. A. Jones & Shipman Limited is raising its interim dividend from 5 per cent to 7½ per cent on account of 1960. Last year's total was 30 per cent.

**Expandite Limited.**—Mr. Bertram Watson, Chairman of Expandite Limited, has reported that group trading results for the current year to date indicate that both turnover and profits are continuing to rise. Although some profit margins are being reduced, the board is satisfied with the company's general trading position.

**Cape Asbestos Subsidiary.**—The Cape Asbestos Co. Ltd. announces the formation of a Belgian company, Appareillage Technique et Industriel S.A., which has acquired the business of that name. The factory and head office are in Brussels. The Belgian company manufactures lubrication equipment, lifts, air compressors, jacks, and washing plant for the motor industry.

**Visit to Works of Robert Stephenson & Hawthorns Limited.**—A visit was made recently to the works at Darlington of Robert Stephenson & Hawthorns Limited, a member of the English Electric Group, by Mr. J. Hudson, Chief Mechanical Engineer, East African Railways. With Mr. Hudson were representatives of the Crown Agents. The day was spent inspecting the "90" Class diesel-electric 1Co-Col locomotives of 1,840 h.p. being built for the East African Railways and described elsewhere in this issue. The accompanying illustration shows, left to right, Mr. B. R. Wild, Manager, Robert

Stephenson & Hawthorns Limited; Messrs. B. D. Clucas, J. Welsh, and S. Potter of the English Electric Co. Ltd.; Mr. Hudson; Mr. F. Gregson, Robert Stephenson & Hawthorns Limited; Messrs. S. E. Lord, W. H. Brittain, and A. E. Baker, Crown Agents; and Mr. W. Urwin, Robert Stephenson & Hawthorns Limited.

**Automatic Telephone & Electric Co. Ltd.**—The directors of the Automatic Telephone & Electric Co. Ltd., have declared an interim ordinary dividend of 5 per cent on account of 1960. Dividend warrants will be posted on October 31.

**B. & S. Massey Limited.**—Starting the year with all departments fully occupied and with substantially increased order books, Mr. K. F. Massey, Chairman of B. & S. Massey Limited, stated that there was reasonable expectation that trading profits in the current year would show an improvement, particularly as they would include for the first time profits of Grosvenor Sheet Metal Limited.

**Woman Found Dead in Sleeping Car.**—A young woman was found dead in a sleeping compartment of a London-Edinburgh express train on August 25. A steward called the guard when the train arrived at Waverley Station, Edinburgh, and told him he could not awaken the passenger. They opened the door and found the dead woman.

**Sale of Llanely Steel Co. Ltd.**—Mr. Anthony Barber, Economic Secretary to the Treasury, has told Mr. Fred Lee, Labour Shadow Minister of Power, that the sale of the Llanely Steel Co. Ltd. was not completed until August 2, on the wishes of the purchasers Duport Limited. For technical reasons, this company wanted the sale deferred until after the end of its financial year on July 31. Although the Iron & Steel Holding Realisation Agency applied for consent to sell on July 6, Mr. Barber stated that it would have been out of the question to announce the terms of sale before the House of Commons rose on July 29. On the price received, he said the test of what a company was worth over and above its break-up value was what



Mr. J. Hudson with representatives of the Crown Agents and the English Electric Group beside "90" Class locomotive for East African Railways

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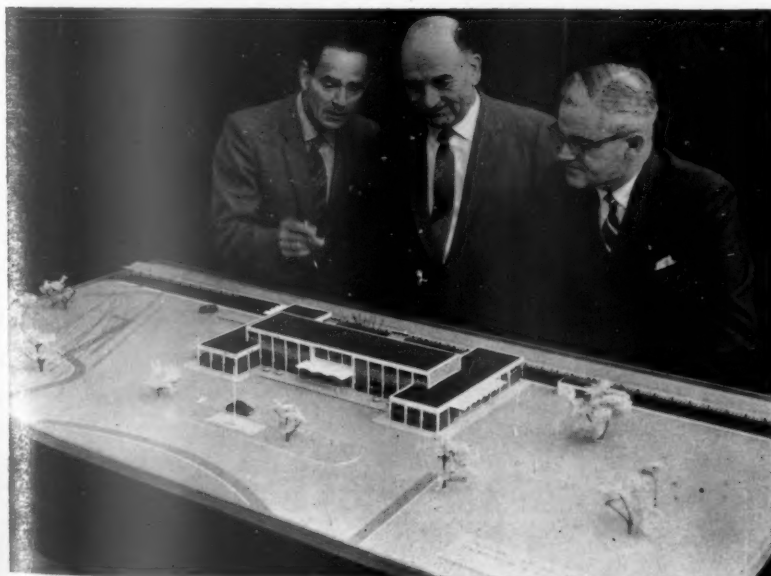
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**Coaches Damaged by Hooligans.**—Several hundred pounds' worth of damage is reported to have been done to 32 coaches standing in sidings at Chaddesden, Derby, London Midland Region, British Railways. Seats and coachwork were damaged, a fire extinguisher was sprayed along corridors, and electric lamps and shades were smashed. Many light bulbs were damaged on a Sunday evening excursion train to Matlock from Mansfield also in the L.M. Region. These trips, it is stated, were suspended for a period last year because of damage by hooligans and may be suspended again this year if the trouble recurs.

## OFFICIAL NOTICES

**BRITISH TRANSPORT COMMISSION** invite applications for the following posts at the British Railways School of Transport, Derby:

### DIESEL TRACTION INSTRUCTORS (TWO POSTS)

Salary Range £1,260-£1,490 p.a.

Instruct Technical and Supervisory staff in the principles of diesel traction, methods and problems of transmission and control, and the operation and maintenance of diesel locomotives and Multi-Unit Stock. One post is for an instructor to deal mainly with electrical subjects, the other with mechanical. Sound theoretical knowledge and practical experience of medium and high-speed diesel engines used in rail traction essential. Professional engineering qualifications required. Experience in teaching desirable. Posts are non-residential.

Superannuation scheme; certain travel facilities; medical examination. Write stating age, qualifications and experience, to Director of Establishment, British Transport Commission, 222 Marylebone Road, London, N.W.1, within seven days.

### RHODESIA RAILWAYS

Vacancies for Signal and Communications Technicians. APPLICATIONS are invited to fill vacancies in Rhodesia for Signal and Communications Technicians who are qualified in performing both signalling and telecommunications work, also applicants qualified to perform either mechanical or electrical work.

Single men between 25 and 35 years of age preferred, but married men within this age limit will be accepted provided they are prepared to travel to Rhodesia alone in the first instance.

Salary scale 62s. 6d. to 68s. per day.

Free passage, pension, good service conditions, including annual leave with pay, sick pay and good prospects of advancement.

Applications in writing should be addressed to:—The London Agent, Rhodesia Railways, 241, Salisbury House, London Wall, London, E.C.2.

### RAILWAY SIGNAL DRAUGHTSMEN

**RAILWAY Signal Draughtsmen**, Electrical, required. Experience in the design of electrical signalling circuits essential. Preference given to applicants having experience in modern M.A.S. panel schemes. O.N.C. or H.N.C. in electrical engineering would be an additional qualification. Salary in accordance with age and experience. Apply in writing giving qualifications, experience and present salary to:—M.L. Engineering (Plymouth) Ltd., Millbay Road, Stonehouse, Plymouth, Devon.

### RICHARD THOMAS & BALDWIN LIMITED SPENCER WORKS

APPLICATIONS are invited for the following posts in the traffic department at Spencer Works, now under construction near Newport, Mon.

#### ASSISTANT TRAFFIC MANAGER

Applicants, who should be between 30 and 45 years of age, should have had wide experience of all forms of transport and logistics, and graduate membership of the Institute of Transport would be preferable.

The successful applicant will deputise for the Traffic Manager and will normally be responsible for the administration, development, trials, training and instruction, within the traffic department, at what will be one of the largest integrated iron and steel plants in Europe.

#### MOBILE PLANT, ROAD TRAFFIC AND RAILWAY SUPERINTENDENTS

Applicants should be between 30 and 45 years of age, and should have had at least five years' experience

in a supervisory role of one or more of the following:—railway operating, mobile plant operating, road transport. Graduate membership of a recognised institute, such as the Institute of Transport, would be an advantage. The post calls for persons who have the ability to deal with the complex transport problems of a modern integrated iron and steel plant.

Successful candidates will be responsible for the allocation, staffing control, and costing and records of plant, road vehicles, locomotives, and rolling stock.

Application forms, which must be returned by September 12, 1960, can be obtained from The Manager, Staff & Labour Relations Department, Richard Thomas & Baldwin Ltd.; Spencer Works, Llanwern near Newport, Mon.

**THE Proprietors of Patent No. 780696** for "Improvements in or relating to Brake Beam for Railway Car Trucks" desire to secure commercial exploitation by Licence or otherwise in the United Kingdom. Replies to Haseltine Lake & Co., 28, Southampton Buildings, Chancery Lane, London, W.C.2.

**DRAUGHTSMAN** required with knowledge of Railway Switch and Crossing Work. Excellent prospects. Apply in confidence giving details of age, experience, qualifications, and salary required, to the Secretary, Isca Foundry Co., Ltd., Newport, Mon.

**SHOTBLASTING—METAL SPRAYING—COATING.** Epikote, araldite, P.T.F.E., P.T.F.C.E., Polythene, P.V.C., Neoprene and Hypalon coatings applied on Site or at Works.—**LOYNE LIMITED**, Margaret Street, Ashton-under-Lyne, Lancs. Tel. No. ASH 4551/2/3.

## Forthcoming Meetings

**September 3 (Sat.).**—British Railways, Southern Region, Lecture & Debating Society. Visit to Redbridge sleeper depot.

**September 3 (Sat.).**—Railway Correspondence & Travel Society, South of England Branch, at the Junction Hotel, Eastleigh, at 6.30 p.m. Members' colour slide display.

**September 4 (Sun.).**—The Railway Correspondence & Travel Society, Cumbrian rail tour.

**September 10 (Sat.).**—Permanent Way Institution, London Section. Visit to Temple Mills Marshalling Yard & Hump Control. Joint visit with the Exeter & West of England Section.

**September 10 (Sat.).**—Railway Correspondence & Travel Society, Kegworth-Kingston-Gotham-Nottingham, and Gypsum Mines tour.

**September 11 (Sun.).**—Railway Correspondence & Travel Society, "The East Midlander" No. 4—Nottingham to Eastleigh and Swindon tour.

**September 13 (Tue.).**—Railway Correspondence & Travel Society, East Midland Branch, at the Thurland Hall, Nottingham, at 7.30 p.m. B.T.C. film show.

**September 16 (Fri.) to September 19 (Mon.).**—Institute of Transport, week-end course at Oxford.

**September 19 (Mon.).**—The Historical Model Railway Society, at Keen House, Calshot Street, N.1, at 7 p.m. Paper on "Welsh railways records," by Mr. T. L. Jones.

**September 19 (Mon.).**—Railway Correspondence & Travel Society, Merseyside Branch, at the Woodside Hotel, Birkenhead, at 7.30 p.m. Paper on "Main-line diesel locomotives," by Mr. G. O. B. Clark.

**September 22 (Thu.).**—Railway Correspondence & Travel Society, West Riding Branch, at the Railway Institute, York, at 7.15 p.m. Paper on "Railway Heraldry," by Mr. George Dow.

**September 23 (Fri.).**—Railway Correspondence & Travel Society, London Branch, at the Railway Clearing House, 163, Eversholt Street, London, N.W.1, at 7.15 p.m. Paper on "L.B.S.C.R. suburban services," by Mr. O. J. Morris.

## Railway Stock Market

With buyers more in evidence, stock markets have showed many features, though subsequently demand became much more selective, centring on shares which still give attractive yields and appear to have reasonable prospects of maintaining their dividends. Recent dealings in London of shares in well-known European companies, and the demand for British shares on the Continent have emphasised that shares of leading British companies are probably undervalued in relation to those of comparable companies in Europe. In general our shares offer larger yields.

Among foreign rails, there were few buyers about, and Antofagasta ordinary declined to 13½ compared with 14 a week ago; the preference stock was 31½ compared with 32½, while the 4 per cent perpetual debentures were again 45½.

Costa Rica Railway ordinary stock failed to hold its rise to 43½, being quoted at 40. United of Havana second income stock was 6½.

Sao Paulo 3s. units kept at 1s. 1½d.; Paraguary Central prior debentures were 17½; and Guayaquil & Quito assented bonds 69½. Mexican Central "A" bearer debentures were 58 and Brazil Railway bonds, 6.

Canadian Pacifics at \$44½ compared with \$44 a week ago, the preference stock was 59½, compared with 58½, and the 4 per cent debentures 62½ compared with 61. White Pass shares eased from \$12½ to \$12.

Gedaref Railway & Development 5 per cent guaranteed debentures were 96. Nyasaland Railways shares were 9s., with the 3½ per cent debentures 46½.

Barsi ordinary stock was 18 and West of India Portuguese capital stock 111.

In engineering and locomotive building shares there was rather more activity, reflecting the general trend in stock markets. Beyer Peacock 5s. shares were 7s. 3d., at which there is a yield of 8 per cent on last year's 12 per cent dividend. Gloucester Wagon 10s. shares were 12s. 6d., and Wagon Repairs 5s. shares 14s. 3d., while North British Locomotive were 11s. 3d. and Birmingham Wagon 34s.

A talking point in the City is that there may be further amalgamations between companies providing equipment for the railways, and that the movement to diversify by widening interests to other activities is likely to continue. In general the shares are at levels showing attractive yields, and from the long-term point of view they are regarded as attractive. It is generally hoped, however, that more companies will issue half-yearly profit statements or progress reports to enable shareholders to take an intelligent interest in their investments.

Westinghouse Brake have been firm at 47s., while Carrier Engineering 5s. shares were 60s. 9d., at which there is a yield of 4½ per cent on last year's 50 per cent dividend. Mather & Platt held steady at 48s. 3d. to give a yield of 4½; last year's dividend was 11 per cent. Elsewhere, Morgan Crucible "A" shares have been steady at 60s. 9d., and Metal Industries were active around 68s.

Among machine tools, Asquith 5s. shares were 12s. 10½d., Wolf Tools 5s. shares 15s. 1½d., Alfred Herbert 61s., and Craven Bros., 5s. shares 8s. 1½d.

Pressed Steel 5s. shares were 31s. 3d., Dowty Group 10s. shares 39s. 3d., and Ransomes & Marles 5s. shares firm at 39s. 3d. with Pollard Bearing 4s. shares 47s. Renold Chain were 42s., and Ruston & Hornsby 30s. 9d. T. W. Ward have been steady at 85s., but Tube Investments eased to 86s. 9d. G. & J. Weir 5s. shares strengthened to 17s.



